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WHAT SHALL WE DO TO BE SAVED?

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It is said that over 2000 years ago "Greece maintained physicians in some of the large cities through a general tax". Since that time at more or less frequent intervals attempts have been made to put the practice of medicine under government control—to treat it as a creature of government, physicians to be paid salaries and the public to be furnished medical aid at the expense of the government. This was done in Germany as early as 1818, and in other countries since then.

In 1932 great impetus was added to this movement in this country by the majority report of the Committee on the Costs of Medical Care. The lay press all over the country took this report as the basis of attack on the quality and distribution of medical service and its cost, and now the subject is frequently and formally debated in high-school and college forensic societies. Surely all this makes it strongly probable that something is wrong with the quality of medical service, its distribution, its cost, or all three, for there is no such agitation for change in the clerical profession, or the engineering profession, or the legal profession, nor is there any widespread dissatisfaction with the cost of automobiles and radio sets, nor with their distribution to the public. Yet the cry is loud and ever louder that something must be done to change the quality and distribution of medical service. Why the agitation?

In the first place, it is only a little over a quarter of a century ago that medical schools granted diplomas to registrants who had "read" medicine for two years. It is true that out of these came some of the foremost thinkers of the profession, men who have blazed the trail for the rest to follow; but a great many of these men moved out into sparsely settled communities, did their utmost for their fellows, it is true, but stopped their own professional progress exactly at the point where they received their diplomas. The country's population grew rapidly and with it demand for physicians. Medical schools conducted for profit turned out ill-chosen and inadequately prepared men, lured by the desire for financial reward or the prestige conveyed by the title "Doctor". Many of both of these classes have never read a medical journal, never attended a medical meeting, and never gone to a medical center for post-graduate review or study.

Then came aseptic surgery. For a while only men who had served long apprenticeships, usually non-productive financially, did the major surgery. Their fees were large to compensate for the years of poor earnings, and justly so, but surgery reached out further and further to relieve suffering and save life; familiarity, as usual, bred contempt, and the graduate of today became the surgeon, or operator, of tomorrow. These novices demanded and collected the same fees as the masters, at the same time competing with their fellows in general work; nor does the public have any certain method of distinguishing the one from the other. Now just as the race was on to get into the medical profession the depression struck. In a little while it was discovered that as a class physicians held up better than any group as to income from business and the rush became a mad scramble. For the sessions

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1934-35 and 1935-36 the number of applicants rejected for medical courses would have more than filled again as many first-year classes as were available. What is the result? In 1934 there were graduated in this country over 5000 more physicians than were needed for normal replacements, each one licensed to practice any and all branches of medicine. Yet there are communities inadequately supplied with physicians because of the gravitation of the recent graduate to the larger places where facilities exist for him to do the surgery he can cull from his own general practice. Does this not in part inswer the question "Why the agitation?"

Despite the fact that the smaller communities have places of amusement, repair plants for radio sets and automobiles, it may be admitted that they cannot afford the technicians, chemists, and specialists and equipment necessary for the complex practice of medicine of today. Surely, with good roads and the transportation of today these are always available in nearby centers, except in the case of a few unusually remote places.

Does any or all of this mean "socialized medicine?" No, assuredly not.

The public does not want "socialized medicine". It has been tried unsuccessfully in other countries. It is un-American. The relation of physician to the patient who elects him above all others available has an indefinable charm to the patient as well as to the doctor. It begets a feeling of mutual interest and trust which works for the best for the patient, and ennobles the practice for the physician. The great majority of the American people want no change, and if they are cajoled into voting "socialized medicine" on themselves will rue it unto the day of reversion to the old order.

Americans enjoy spending money. Give them an excellent product and they will buy it greedily and pay well for it, unless it be overproduced. Make every physician a well-trained practitioner, with integrity enough to do only what he is qualified to do, and there will be no "problem". In the absence of this "Utopia" safeguard the public against the untrained and unscrupulous among us and we need not fear "socialized medicine" in any of its forms. First, last and all the time, let us resist any effort of outside agencies to dictate our methods of practice.

It is not supposed for a moment that all the foregoing statements will be accepted. On the contrary, most of this subject matter is extremely controversial. It will at once be pointed out that this country, except in maternal and fetal mortality, stands in the front ranks in most medical endeavors. American surgery is second to none and in hygiene and sanitation, public health and preventive medicine this country is foremost. The startlingly reduced incidence of tuberculosis, typhoid, and malaria, and the reduction in infant mortality are examples. These but offer proof positive that American medicine has been fundamentally sound. But the profession must not rest on its laurels. Surely if overproduction and poor distribution of mechandise proved disastrous to industry, overproduction and faulty distribution of the most important commodity in American life, medical service, will indeed be a calamity compared to which the former will fade into innocuous insignificance. Unnecessary calls, illegal and unnecessary operations will multiply in direct ratio to the oversupply of physicians in each community.

What then, shall we do to be saved? First, last, and always resist with all our might the efforts of others to conduct our affairs. Consider seriously all plans for betterment of our sevice, adopt what is helpful and reject the rest, but always do our own administering. Make ourselves unassailable by working to the end that attendance for at least a month each five years at a medical center be a requisite for continued membership in organized medicine; choose candidates for the pre-medical course with scrupulous care as to citizenship background as well as scholastic accomplishments and cull these registrants carefully at the end of each session through the first medical year; reduce the number of medical matriculants to approximately the number needed for replacements; take operative surgery out of the curriculum and put it in an extra year for those carefully chosen for fitness and willingness to serve another five years apprenticeship; certify specialists ourselves to forestall the govern-

ment in this all-impotant function and make known to the public those whom the profession deems qualified in various branches. Briefly, then, the formula is this: Give the American public well-trained physicians prevented by Boards of their fellows from doing the things they have not qualified to do and the threat of state or socialized medicine will promptly meet the death to which the character of the average Americans has already foredoomed it. Let government and well-meaning but misguided lay organizations concern themselves with eradicating cults and quacks—the medical profession is not only willing but is eager to improve its service and is the only body competent to do so.

PATHOLOGY OF SICKLE CELL ANEMIA*

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Sickle cell anemia is a familial, hereditary disease confined almost entirely to the negro race. There is a possibility that it exists in the Caucasian race[1, 2, 3, 4, 5]. The original observation by Herrick[6] in 1910 and the papers by Washburn[30], Cook and Meyer [7] and Mason[8] furnished the basis for the differentiation of the disease which was established as a clinical entity by the early reports of Sydenstricker and others[9, 11, 14]. Since this time a fairly large literature has accumulated and the clinical manifestations as well as distinctive pathological features have become well established.

One of the most interesting features is the peculiar and distinctive poikilocytosis observed in the circulating blood of an active case, in vitro and postmortem. The majority of observers have considered this of basic importance and have interpreted it as evidence of a constitutional abnormality of the hematopoietic system which is transmitted equally by both sexes as a dominant character according to the Mendelian law. Most of those thus stigmatized show nothing more than a sickle cell trait which can be demonstrated by sealing a cover slip preparation of fresh blood with vaseline. It is estimated that about eight per cent[10] of the negro population show this phenomenon. In this group, a few, likely to show other stigmata such as physical or mental underdevelopment, develop an active hemolytic anemia. This may be present at birth or the period of onset may be during infancy, childhood, adolescence or early maturity[12]. Graham[12] states that the onset of active symptoms probably indicates the point at which an excessive rate of hemolysis can no longer be compensated through some overactivity of the hematopoietic system or through some other physiological check or balance. Such an individual is poorly equipped to withstand the vicissitudes of life and becomes an easy mark for infectious diseases. The majority of them have died before thirty years of age.

In many respects sickle cell anemia resembles congenital hemolytic jaundice. Its occurrence only in the negro race, absence of increased fragility of the erythrocytes in hypotonic salt solution, characteristic pathological anatomy and the distinctive poikilocytosis constitute noteworthy differences.

Experimental observations on the behavior of the blood in these patients have furnished many interesting facts[12, 13, 14, 15, 16, 17] but little that illuminates us on the nature of the process in vivo. That susceptible cells are constitutionally abnormal appears to be established. The full scope of the abnormality is not definitely known and the mechanism by which one of the visible evidences of this abnormality (sickling) is produced is not agreed upon by the separate investigators[12, 15, 16].

The pathological changes observed in all active cases of sickle cell anemia are so similar and constant that it may be said that it is an entity from a standpoint of pathology. The relevant pathology observed in five active cases studied postmortem and three spleens removed surgically during the past three years will serve to verify the distinctive pathological picture in the disease. It is not our purpose to add anything fundamentally new on the pathologic anatomy of the disease but rather to report in a summary fashion observations on additional material.

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Age	Sex	Intercurrent Disease
6 mos.	Male	Acute peritonitis following splenectomy
7 yrs.	Female	None
21 yrs.	Male	Subacute and chronic glomerulonephritis
22 yrs.	Male	Subacute and chronic glomerulonephritis. Pneumonia.
29 yrs.	Male	Osseous and pulmonary tuberculosis.

TABLE 1—CASES WITH POSTMORTEM EXAMINATION

Of the cases coming to necropsy, it will be observed from Table I that all died before thirty years of age. With one exception, intercurrent disease or diseases were important in the cause of death. Two had subacute and chronic glomerulonephritis with considerable hypertrophy of the heart. One of these, aged 22 years, who died during a latent reaction from a blood transfusion, showed lobar pneumonia. A twenty-nine year old male died of osseous and pulmonary tuberculosis. A six months old male died of acute peritonitis following partial eviscration through the splenectomy wound on the fourth postoperative day. A seven year old female showed no evidence of active intercurrent disease.

The pathology of the spleen is characteristic. It consists of a series of progressive changes characterized in the beginning by congestive enlargement and in the advanced stages by fibrous atrophy with iron and calcium incrustation. Clinical and postmortem observations would indicate that some degree of splenic enlargement is probably always present in the earlier phases of the disease. Large spleens are more likely to be encountered in infancy or early childhood[10]. The average weight of the spleen in eight reported cases under five years was 240 grams[10]. A spleen weighing 621 grams was removed from a boy four years old[17]. The average weight of twenty-five spleens from patients over 5 years of age was 70 grams[10]. The largest spleen recorded, weighing 960 grams, was removed at autopsy from an adult female who died of shock following cesarean section[18]. Marked atrophy of the spleen has been reported in young children[14]. Diggs and Ching[10] could find no remnant of the spleen at autopsy on a fifty-one year old male. Corrigan and Schiller[20] reported a spleen weighing .87 grams from a twenty-three year old female. Two spleens of this series showed extreme atrophy as will be observed from Table II.

		Spleen		Liver
Age	Sex	Weight	Measurement	Weight
6 Mos.	Male	157 gms.	11x7x5 cm.	320 gms.
1 Yr.	Female	80 gms.	10x5.5x3 cm.	
2 Yrs.	Female	292 gms.	15x10x6.5 cm.	
7 Yrs.	Female	50 gms.	7x5.5x3 cm.	1100 gms.
21 Yrs.	Male	1 gm.	3.5x1x.5 cm.	2250 gms.
22 Yrs.	Male	2.6 gms.	5x1x1.4 cm.	2480 gms.
23 Yrs.	Male	75 gms.	9x5x4 cm.	
29 Yrs.	Male	250 gms.	12x9x6.5 cm.	1800 gms.

TABLE II—WEIGHTS OF LIVERS AND SPLEENS AND MEASUREMENTS OF SPLEENS

Three spleens (ages 5 months, 1 year and 2 years) of this series were representative of the early stage of the disease. They were enlarged, dark purple in color, free from adhesions and the capsular surfaces were coarsely pebbled due to overdistension with blood. The sectioned surfaces were dark red in color, firm and the Malpighian bodies were minute, widely spaced and absent or obscured for large areas. The trabeculae were inconspicuous. Microscopically, the Malpighian bodies were found to be small, often distorted and showed intense congestion in the marginal zones which was continuous with similar engorgement of

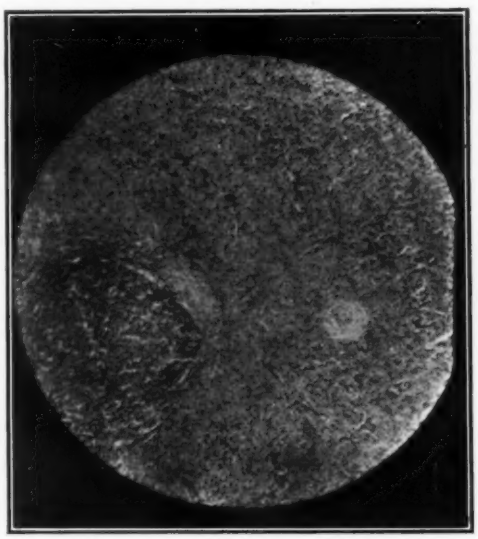


FIGURE 1

Section of spleen showing fibrosis of the marginal zone of the Malpighian body and lymphoid sheath surrounding a central artery. x150.

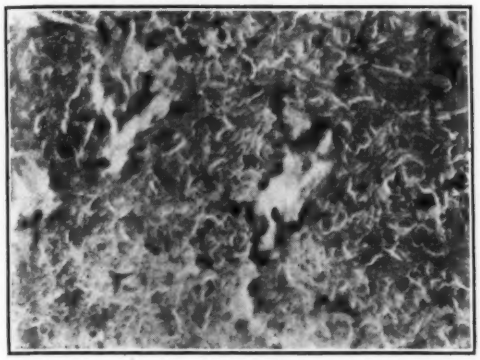


FIGURE 2

Section of spleen showing marked congestion of pulp cords, compression of venous sinuses and sickled and elongate erythrocytes. x600.

the pulp. Only in one case (age 1 year) was marginal congestion of the Malpighian bodies of greater intensity than that of the intermediate portions of the adjacent pulp and this was not constantly so. Early fibrosis was seen in the peripheral zones of many of the Malpighian bodies and a few were completely obliterated by scars which were either dense or of looser arrangement containing a few erythrocytes, the majority of which showed the characteristic deformity. The central arteries frequently showed obstructive endarteritis, partial or complete, due both to proliferation of the lining cells and thickening of the subendothelial portion of the intima. The endothelial cells lining many of the smaller arteries appeared to be swollen. Thrombosis was not found. The pulp cords were markedly thickened due to engorgement of the spaces with crescentic and elongate erythrocytes. The sinuses in the greater part of every section examined were compressed, often completely obliterated and largely empty. In the subcapsular zone of one of the specimens there were areas in which the sinuses were widely dilated and filled with closely agglutinated and characteristically deformed erythrocytes. Large mononuclears, an occasional eosinophile and a few nucleated red blood cells were found in some of the sinuses. Areas both in the margins of the Malpighian bodies and in the intermediate zones of the pulp cords gave the appearance of the reticulum having been disrupted with consequent pooling of blood. Phagocytosis of the erythrocytes was rare and found only in the free mononuclears. Fine and coarse granules and masses of dark brown iron free pigment, both free and within phagocytic cells, were abundant.

Three of the spleens (ages 7, 23 and 29 years) were characteristic of those showing more advanced changes. The ages of the patients as well as the sizes of the organs differed widely. Only one can be considered smaller than normal. Active and healed tuberculosis were probably of importance in deter-

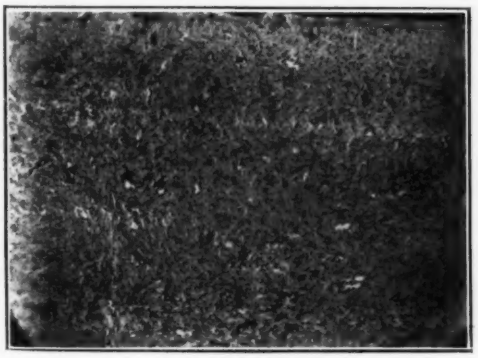


FIGURE 3

Section of spleen showing small, empty venous sinuses, thickened pulp cords and non-iron containing pigment. x200.

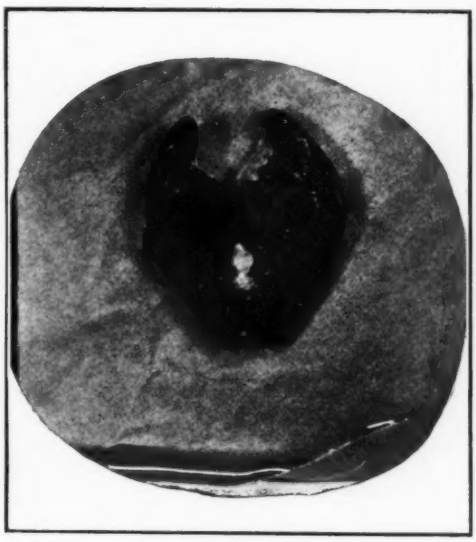


FIGURE 4

Spleen from a 23-year-old male. The oval, circumscribed nodules are probably hyperplastic regenerative areas of splenic tissue.

mining the size of the largest. Notwithstanding these differences, there were many features in common. Macroscopically, the thickened, slate colored, wrinkled capsules showed rust brown plaques and evidence of dense adhesions. Two of them presented a nodular outline due to oval elevations of varying sizes over which the capsules were smooth. The cut surfaces were firm and the red brown pulp was partitioned off by thickened trabeculae and fibrous bands which were quite prominent

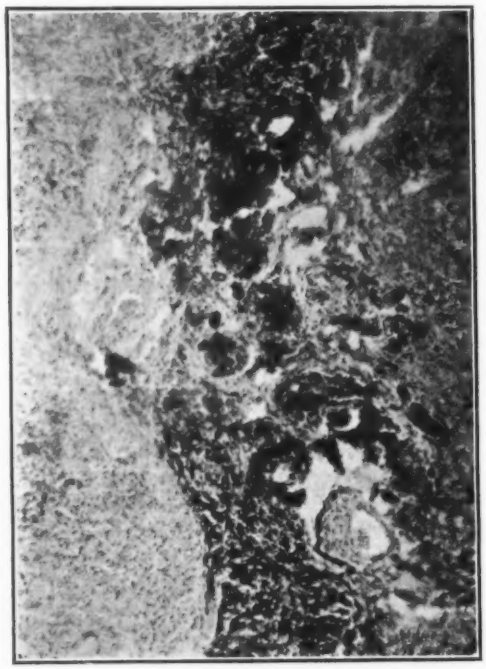


FIGURE 5

Section of spleen showing an area of hemorrhage on the left and thickened trabeculae, closely aggregated Malpighian bodies and scars containing calcium and iron-containing pigment centrally. x200.

in one. Of particular interest were the oval, dark red, slightly bulging circumscribed nodules occurring in all three but numerous in one. The nodularity noted in the gross was caused by these areas situated in the peripheral zones of the organs. Microscopically, the capsules and trabeculae were markedly thickened and contained a large amount of calcium and iron-containing pigment. Irregular scars together with the closely placed trabeculae separated numerous small areas of hemorrhage, usually oval in shape, which showed a varying amount of organization at the peripheries and to a less extent throughout them. The Malpighian bodies for the most part showed no trace of lymphoid cells. A few of them were dense scars about the narrowed central arteries. The majority of them, however, were seen as closely aggregated, oval areas, without structural details, filled with greenish yellow masses of iron-containing pigment either with or without calcium. Throughout the smaller areas of hemorrhage there was an abundance of iron-free and iron-containing pigment, both free and in phagocytic cells. The small and medium size arteries showed marked thickening of their walls and thrombosis was common. Calcium was deposited in the medial layer of some of the larger arteries. Giant cells were rather numerous in many of the heavily pigmented and scarred areas and some of them had formed about masses of pigment.

The marginal zones of the oval, dark red, circumscribed areas noted in the gross had the appearance of rather normal looking pulp with the pulp cells quite numerous. The venous sinuses for the same distribution were normal in size and contained large mononuclears and in a few instances marrow cells. Towards the centers of these areas the pulp cords were markedly engorged with erythrocytes with an apparent diminution of the pulp cells. The venous sinuses were compressed and largely empty. Malpighian bodies were not found and

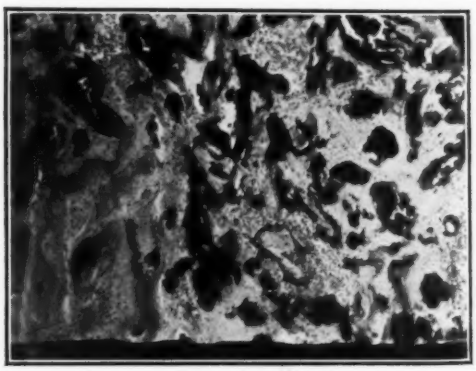


FIGURE 6

Section of spleen. The pulp is replaced by fibrous tissue. The thickened trabeculae, scars and remains of Malpighian bodies contain a large amount of calcium and iron-containing pigment. x200.

only occasionally a medium size artery was seen. There was an abundance of brown pigment both free and within phagocytic cells throughout these areas.

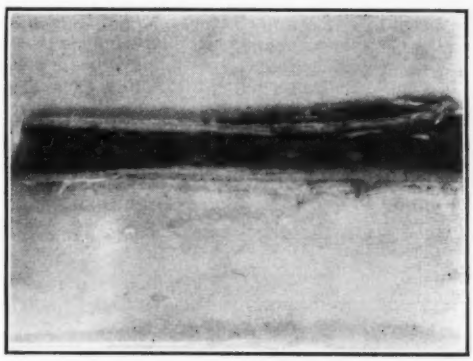
The two spleens showing extreme atrophy (ages 21 and 22 years) are characteristic of those showing the most advanced changes. These were shriveled, elongated, triangular masses that were free from adhesions. The capsules were rust brown in color and coarsely wrinkled, giving a corrugated appearance. The sectioned surfaces were of a rust brown color, firm and fibrous. Microscopically, the capsules and trabeculae were markedly thickened and contained a large amount of calcium and iron-containing pigment. A few small, oval, structureless areas filled with iron-containing pigment and calcium represented the remains of the Malpighian bodies. The pulp was replaced by either dense hyaline scars or connective tissue of looser arrangement containing a few lymphocytes, plasma cells and an occasional eosinophile. The small arteries were largely obliterated. Occasionally a central artery showing marked endarteritis was identified. The larger arteries, including the splenic, showed arteriosclerosis.

Both the superficial and deep lymph nodes were constantly found enlarged. In the 7 year old female they were quite large, discrete nodes of the mesentery measuring as much as 3 cm. in diameter. Microscopic findings common to all were marked congestion of the capillaries, a varying number of histiocytes in the medullary cords and sinuses, diffuse fine scarring of the reticulum which varied in intensity and a varying amount of non-iron-containing pigment largely within phagocytic cells in vessels, medullary cords and sinuses. In the older cases the trabeculae and capsules were thickened. Eosinophiles and plasma cells were usually more numerous than normal. The lymphoid follicles did not appear to be any more numerous than one would expect to find in the respective age groups. Proliferation and swelling of the endothelial cells lining vessels were not constant findings. Erythrophagocytosis was rare and not constantly found.

The weights of the livers are recorded in Table II. It will be observed that some degree of enlargement was found in all of them. This has been the usual postmortem and clinical finding in active cases. The hepatic cells, often poorly defined, were more granular than normal and showed fatty change of varying intensity. The liver cords in some appeared to be actually reduced in thickness and the sinusoids widened. These latter contained erythrocytes, many of which were sickled, and in some places were packed with them. Large phagocytic cells containing many characteristically deformed erythrocytes were usually abundant in the sinusoids. Nucleated red cells were quite numerous in the sinusoids of two. Both iron-free and iron-containing pigment was present in the Kuppfer's cells. A varying amount of iron-free pigment was found in the hepatic cells. The periportal connective tissue infiltrated abundantly with lymphocytes and a few eosinophiles was quite marked in three cases (ages 7, 21 and 29 years). In the others, this was not greater than one usually finds in routine autopsy material of similar age groups. In one (aged 22 years) a few, small, soft black calculi were found in the gallbladder.

The findings in the kidneys, specifically related to the disease, consisted of marked congestion of the tubular and glomerular capillaries with sickled cells and a deposit of both iron-free and iron-containing pigment in the convoluted tubules and, in some instances, in the glomeruli.

The bone marrow in two cases (ages 5 months and 29 years) was of a bright red color and probably softer in consistency than



FIGRE 7
A portion of the tibia from a 22-year-old male showing marked hypertrophy of the marrow.

normal. In the others it was of a red or grayish red color and quite abundant, filling the enlarged medullary cavities of the long bones as firm masses. A thin marginal zone contained delicate bone trabeculae. Pale, yellowish scar-like areas were seen in the gross in all the solid marrows and in one (age 7 years) these were quite large, entire short segments of the marrow being involved. The capillaries of all of the specimens were engorged with elongate and sickled cells. Hemorrhage into the marrow stroma was inconstant. Large areas would show none while others, in many instances appearing to be related to overdistended sinusoidal capillaries, showed marked hemorrhage. Phagocytosis of erythrocytes was rare. A small amount of iron-containing pigment was present in the fixed tissue cells and in large mononuclears in the older patients. Minute scars and a varying amount of reticular fibrosis was found in all of the marrows. Infarctions occurred in three (ages 7, 21 and 22 years). The primitive and intermediate cells of the granulocytic series were usually more abundant than the megaloblasts and nucleated red cells. Rarely a nucleated sick cell was identified. The megakaryocytes were increased. Eosinophiles and lymphocytes were distributed throughout the sections.

The hearts regularly showed moderate enlargement and were twice the normal size in the two patients with nephritis. The myocardium was pale and soft and on microscopic examination fatty degeneration of varying degree was found. Scarring of the myocardium in three (21, 22 and 29 years) was considerable.

Except for engorgement of the capillaries with sickled cells and thrombosis of smaller vessels of one (age 22 years) the lungs presented no unusual features. Lobar pneumonia was found in one (age 22 years) and pulmonary tuberculosis in another (age 29 years).

COMMENT

The interpretation of the findings in the spleen in sick cell anemia is puzzling. The enlargement observed in the early phase appears to be due largely, if not altogether, to congestion. Malformations of the venous sinuses and capillaries have been suggested as responsible factors but so far as I know details of actual findings of this nature have not been reported. Rich[21] considered pooling of blood about the Malpighian bodies, either completely or partially surrounding them, a characteristic splenic lesion and referred it to congenital imperfections of the ampullae of Thoma. Graham found the congestion immediately surrounding the Malpighian bodies of greater intensity than that in the intermediate portions of the pulp in most of his material. We have been particularly impressed by the marked engorgement of the pulp spaces with crescentic and elongate erythrocytes, compression of the sinuses and what appears to be rupture of the overdistanced pulp spaces with consequent hemorrhage. However, in some of the sections including the peripheral zone of the organ, there were found just beneath the capsule dilated sinuses filled with closely agglutinated and characteristically deformed erythrocytes. Furthermore, it must be confessed that structural detail of the organ was completely obliterated in some areas by the abundant blood.

Mall[2] and more recently Robinson[33] have shown that the splenic circulation is an open one. The end capillaries or portions beyond the ellipsoids were found to expand into ampullatious dilatations and fuse with the pulp. The blood then takes a devious course through the pulp spaces and finally enters the venous sinuses through stomas in their walls. The propulsive force of the circulation, once the blood has reached the pulp spaces and venous sinuses, resides in the musculo-elastic tissue of the capsule and trabeculae.

In view of the peculiar intermediary circulation of the spleen, it has occurred to us that the distinctive physical characteristics of the erythrocytes might offer some impediment to the circulation in the smallest capillaries and particularly in the pulp spaces. It would appear on a morphological basis that some of the hemorrhages observed in organs showing both early and more advanced changes are related to rupture of overdistended pulp spaces. There is some indirect evidence in support of such an hypothesis. The capillaries are always engorged, the pulp spaces are packed with char-

acteristically deformed cells that are interlocked and closely agglutinated and the venous sinuses for the most part are compressed or empty.

Atrophy associated with more advanced changes is due to diffuse fibrosis of the organ. Both the lymphadenoid and pulp portions appear to suffer equally. The underlying lesions appear mainly to be obstructive endarteritis, thrombosis of the smaller vessels and hemorrhage. Gross infarction was not observed in any of our material, although this has been a frequent finding in the reported cases. The changes observed in the smaller arteries suggest toxic injury[24]. Whether this results from ordinary toxic or infectious conditions in a constitutionally abnormal person, from an overburdened reticulo-endothelial system extremely active in phagocytosis or erythrocytes, or whether there is specific toxemia, is problematic.

Calcium and iron incrustation in the degree and distribution that it is found in the spleen in sickle cell anemia is unusual and probably specific for the disease. Bennett[25] reported a case as nodular atrophy of the spleen with calcium and iron incrustation and later recognized it as sickle cell anemia[19]. Goldberger's case[26] of nodular atrophy of the spleen with calcium and iron incrustation was a negro. In the study of the sections he remarked that the erythrocytes were elongate. Calcium deposit does not seem to have a specificity for small spleens and it has been found in various lesions of the spleen as well as other organs. Kaufman[27] found spleens weighing 19 and 10 grams, respectively, in two aged women in which the pulp had largely disappeared and the trabeculae and blood vessels had become correspondingly more prominent. In each instance a brown amorphous pigment was found but apparently not identified. Erhlich[28] reported that elastic fibers in the neighborhood of scars or infarctions have a tendency to absorb iron. He believed that the deposit of iron preceded that of calcium and found them both present in elastic fibers and scars of splenic infarctions. Bennett concluded that iron was of primary importance in calcium deposition. Thus it would appear that the lesions of the spleen in this disease particularly favor the deposit of iron and calcium, iron being of primary importance.

The oval, circumscribed, homogeneous appearing areas noted in the gross are peculiar. Graham[24] interpreted these as probably hyperplastic regenerative areas of splenic tissue, the so-called splenadenoma. The presence of definite pulp structure, the lack of Malpighian bodies and trabeculae and the absence of definite features of hemorrhage or fibrotic and pigmentary changes common to the remainder of the organ would appear to support this view.

Both the erythropoietic and granulopoietic tissues of the marrow are hyperactive. In the younger patients in this series the two appeared to be about equal, while in the older cases the granulopoietic tissue predominated. In all, however, evidence of overactivity of the erythropoietic tissue was apparent. Large infarcts were found in one and smaller necrotic areas interpreted as infarcts were found in two others. It is probably significant that scarring of any proportion or infarction occurred only in the solid marrows which completely filled the medullary cavity and eroded the medullary portion of the cortex. This suggests that spatial adaptation may be a factor in the causation of these lesions.

Phagocytosis of the erythrocytes, which is a prominent feature both postmortem and clinically, appears to be an attempt on the part of the reticulo-endothelial tissue to rid the blood of inherently abnormal red blood cells. It has been suggested that deformed erythrocytes may act as foreign bodies.[29] Just what part erythrophagocytosis plays in the production of the anemia is problematic.

SUMMARY

The relevant pathology of five cases of active sickle cell anemia studied postmortem and three spleens removed surgically are reported.

It is suggested that the distinctive physical characteristics of the erythrocytes in active sickle cell anemia offer impediment to the circulation in the pulp spaces of the spleen. Partial but sustained obstruction to the intermediary circulation on this basis would offer satisfactory explanation for the stage of congestive enlargement.

Rupture of overdistanced pulp spaces appears to be one source of hemorrhage.

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DISCUSSION

Dr. S. Chaille Jamison (New Orleans): I am going to have the temerity to answer this discussion, not because I am a pathologist, or with any pretense to being a pathologist, but because I have been interested in this disease for many years, and have published several accounts of various cases. As a matter of fact, we saw sickle cell anemia in Dr. Bass's laboratory before the disease had been described—at least about the same time. I brought a specimen from one of my wards at Charity Hospital to our laboratory and I had never seen these peculiar sickle cells before. Dr. Bass and Dr. Johns looked at it and Dr. Bass said "That is something out of the ordinary and you should report it." Well,I missed the chance and did not report it. Dr. Hauser and I did report a rather typical case years ago.

No man has done more work on sickle cell anemia than Dr. Sydenstricker of the University of Georgia. Graham of Birmingham has done much in the South.

From the standpoint of the clinician, we have three types of sickle cell anemia: First, we have the true clinical sickle cell anemia, that is the anemia with definite clinical manifestations. These consist of ulcers, which simulate to a certain degree syphilitic ulcers. These patients are apt to have a peculiar granulation of the sclera. Dr. Hauser and I could not determine whether it was jaundice or not. This particular patient had a spleen no bigger than my thumb. I am very much interested in Dr. Mathews' hypothesis that in the first stages the spleen is enlarged, but as the disease progresses, the spleen becomes smaller. In the splenectomies done, it has been reported they proved of some benefit. I question that very much.

Next, we have the sickle cell anemia that you can recognize in no clinical way I know of. It has no manifestation that that of any ordinary anemia has. You pick this up when you examine the blood smear.

The third type, that described by Sydenstricker, is the potential type where no sickling comes up until a specimen of the blood is put in solution and let stand. He has been able to show that if the patient presents true sickle cell anemia, observation may not show it, but the blood will sickle if put aside in rather permanent specimens, but on ordinary examination of the blood no sickling would appear.

My observations extend over twenty-five years, and we perhaps saw several a year, though we were not so fortunate as Dr. Mathews in getting so many autopsies. My own experience with sickle cell anemia of the type where the patient presents no real clinical symptoms and with the potential type was that they are of more interest than importance. I have not been able to see that the fact they had sickle cell anemia, that any definite clinical manifestations could be attributed to it more than any other anemia. It is my idea that it is very questionable, in spite of the splendid pathological demonstration here today, to place sickle cell anemia in a definite entity as a disease. It strikes me sickle cell anemia is more of an anatomical peculiarity, due to certain racial and probably hereditary causes. There have been at least two cases I know of in white persons reported, but that was from the middle west, and in the northern part of the middle west and I was not at all certain that the ancestry of these patients was entirely free of a touch of the tar. Certainly, we have not seen sickle cell anemia in the south in any but negroes, and I feel that if I saw sickling, definite sickling in the blood of a white man, I would look for a nigger in the woodpile somewhere.

I have been enormously interested in this paper and I want to congratulate Dr. Mathews.

Just one last word—I wonder if he has neglected the possibility that the administration of iron might not be responsible for the appearance of iron in the various autopsies. These patients might have been treated with iron.

Dr. W. R. Mathews (In conclusion): In regard to Dr. Jamison's question concerning iron therapy, I am unable to say what medication these patients had before entering the hospital. I feel rather certain that they received little or no iron at Charity Hospital.

Like Dr. Jamison, I feel that there is no good basis for splenectomy in this disease as a curative procedure. It is conceivable that splenectomy during the stage of splenic enlargement might spare the patient whatever discomfort there is associated with infarction, which accident has been reported fairly frequently. Several years ago Sydenstricker pointed out that the spleen appeared to suffer more than it offended. More recently Diggs has suggested that these patients will usually splenectomize themselves if let alone.

Dr. Jamison called attention to the potential cases, sicklemia, which constitute about 8 per cent of the negro population. Only a few of these develop an active anemia. The vast majority of them appear to be at no particular disadvantage from this peculiar property of their erythrocytes to sickle under appropriate conditions.

INTENSIVE RADIATION IN HYPERTHYROIDISM*

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By the term hyperthyroidism we mean the condition or symptom complex observed in cases of true Parry's disease or exophthalmic goiter, toxic adenomas of the thyroid and others showing a high metabolic rate, accompanied with the characteristic nervous symptoms usually produced by excess thyroxine secretion.

By the term intensive radiation we mean, for the purposes of this communication, a large quantity of the type of radiation usually applied in the treatment of hyperthyroidism, the same quantity and type more frequently applied, or a form of radiation produced by the higher voltages and heavier filtration.

In calling attention, again, to the treatment of hyperthyroidism by roentgen radiation, it is not my intention to revive the argument as to the relative merits of surgery and radiation in this condition. It would seem that a careful review of available literature on the subject would be convincing to any unbiased mind, that radiation commands most careful consideration in the plan of treatment for toxic thyroid cases. The analysis, made by Menville, of results in over ten thousand cases treated by radiation given by many operators over the country, settles this question very definitely.

The object of our presentation is to urge a more intensive type of radiation than usually applied, or a more intensive use of the type as generally used by radiologists. The argument advanced by those who advocate surgical removal as the only treatment, that the time consumed and lost by the use of roentgen ray therapy is a hazard to the patient, is the only argument against radiation which is rational and logical. To those who realize the damage thyrotoxic states have upon a heart, no further argument is needed to convince them that the toxicity should be relieved as promptly as possible, providing of course, more serious hazards are not introduced in the effort.

We are all agreed that the quickest method of relieving the patient of his toxic source is the removal of the greater portion of the thyroid gland. I think we are all agreed again, that if the toxemia can be controlled within a period of a few weeks the interests of the average patient are being properly cared for. This is evidenced in the practice of experienced surgeons who consume weeks in preparing their patients by rest and the use of iodine, or for months by ligation of the thyroid arteries or installment operations. Therefore, if we can accomplish control of the toxic state within six to twelve weeks or sooner, by radiation, the one argument against its use falls.

For the last twenty-five years or longer, hyperthyroidism has been treated by roentgen radiation. The technic has been varied only slightly—125 to 150 K. V. P. with divided dose and long intervals, three or four weeks, being the generally accepted plan. The results from various sources have been fairly uniform and on a par with the general average of surgery over the country. With

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this technic, it would seem that the toxic state is allowed to run unnecessarily long.

We have in our files today records of cases cured of their hyperthyroidism, but who are carrying crippled hearts. Some, of course, come with crippled hearts; some, we fear, could have been saved permanent myocardial changes had more intensive radiation doses been applied.

On reviewing the latest reports from those of wide experience in the treatment of toxic goiter by radiation, we find as stated, that their treatment intervals run from three to four weeks and the time consumed in treating an average case, four to six months or more. The opinion of surgical men seems to be that it is proper to relieve a patient of his source of toxicity, the thyroid gland, at one stroke. This being the case, it would appear there could be no reason for not relieving him by radiation as rapidly as possible, as the stimulating effect of radiation is rather a myth than a fact.

We have been treating toxic goitres for over twenty years by means of roentgen rays and have varied our technic over a very wide range. We have been convinced that there is little difference in the effect of roentgen rays in these cases, produced by radiation of high and low voltages. On the other hand, we have been convinced that there is a very decided difference in results when the patient is kept constantly under the effect of radiation or given intensive doses, as compared to the cases treated at long intervals and with low intensities.

According to the physicist, roentgen ray effects produced in living tissue fall away at the rate of 8 per cent per day. This means, if a maximum dose is given, 56 per cent may be added in seven days with no ill effect on the skin. In practice we have found this true and have evolved the plan of adding, each seven days, about 50 per cent of the full dose given at the beginning of the treatment. These doses may be continued over a period of five or six weeks, with safety. In cases living at inconvenient distances, K. V. of 200 C. P. is used at two to four week intervals.

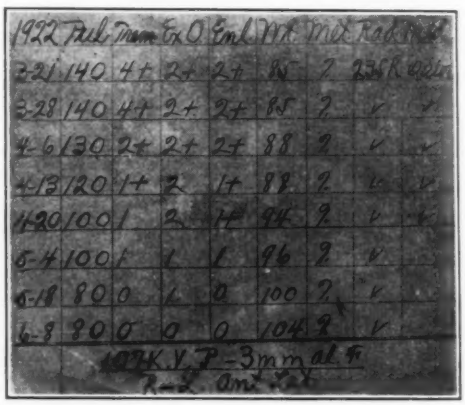
Under either of these plans, we expect to see the toxicity yield rapidly and the patient discharged in about one half the time consumed with long intervals and low intensities.

We routinely place our patients on hydrobromide of quinine, when very toxic, and never iodine.

In practically all cases that have come to us with recurrences following operation, and others showing marked resistance to treatment, we have found infected tonsils, teeth or other foci. Therefore, we are very particular in having these hindrances controlled from the first.

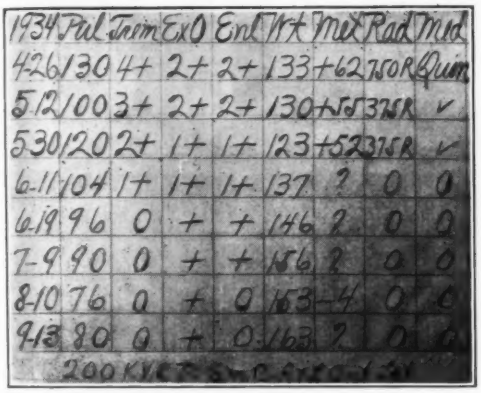
The following two cases are illustrative of results that may be expected:

Case 1. White female, aged 35 years. Her pulse, tremor, exophthalmos, thyroid enlargement, and weight are indicated in Chart No. 1. This patient became practically toxic free in about six weeks. The treatments were applied every seven days for five weeks and then every two weeks for three additional treatments, the patient being discharged in ten weeks. No metabolism rates were being taken at the time her treatment was given. After twelve years, she still has a crippled heart, though her general health is now good and no thyroid toxicity present. (See chart I).



(Chart I)

Case 2. White male, aged 25 years. The prominent symptoms in his case are noted in Chart No. II. His improvement was such after using intensive radiation, that only three applications were given. Seven weeks after beginning treatment, he was toxic free and remains well today. Metabolism tests were not regularly made, because of difficulty in controlling patient after he began to improve. (See chart II).



1934	Pul	Term	Ex O	End	Wt	Met	Rad	Med
4-26	130	4+	2+	2+	133	+62	750R	Quin
5-2	100	3+	2+	2+	130	+55	375R	✓
5-30	120	2+	1+	1+	123	+52	375R	✓
6-11	104	1+	1+	1+	137	?	0	0
6-19	96	0	+	+	146	?	0	0
7-9	90	0	+	+	156	?	0	0
8-10	76	0	+	0	163	-4	0	0
9-13	80	0	+	0	163	?	0	0

200 KVCT

(Chart II)

DISCUSSION

Dr. Leon J. Menville (New Orleans): Dr. Barrow has presented a most interesting subject for your consideration. He particularly stressed the point in regard to high voltage treatment in thyrotoxicosis. I do not believe there is any argument between radiologists as to whether moderate or high voltage is the best to use in treating goiter cases. We all agree that irradiation therapy is an effective means of treatment in such cases.

It might be well at this time to mention that irradiation is not a substitute for surgery, and vice versa, surgery is not a substitute for irradiation therapy in the treatment of toxic goiter, because of the fact that the good results obtained in surgery are also obtained by irradiation therapy, when it is applied by one who is familiar with the treatment. Both forms of treatment are at times disappointing. We should remember that success in medicine is obtained by the judgment and skill of the physician, and not by the media in which he works.

I have been interested in the use of irradiation therapy for the treatment of goiter patients for a long time. I am even more enthusiastic about it now than ever before. It may be of some interest for you to know that in a series of over 10,000 cases treated with irradiation therapy by radiologists of varying experiences in the United States and Canada, some treating as few as five cases, others as many as a thousand cases, the percentage of cure was as great as that of surgery without any mortality.

An interesting report has just been announced from the Roentgen Institute of Vienna, by J. Borak, Director of this Institute, to the effect that irradiation applied to the pituitary gland of women at the menopausal period, suffering with toxic goiter, have been relieved markedly. It has been the experience of many radiologists that women at or near the menopausal period with toxic goiter in certain instances do not respond well to any form of treatment. Borak speaks of the interrelationship existing between the pituitary and the thyroid glands, and on this basis he reports a number of favorable results obtained on women patients with toxic goiter who had their pituitary gland irradiated. We have personally treated three such cases, but it is too early to say what the results are going to be.

There are certain types of goiter which irradiation therapy does not benefit, such as cystic goiter. Others are better benefited by surgery and still others by treatment by a competent internist. However, it should be remembered that a very large percentage of goiter cases are amenable to irradiation therapy, which Dr. Barrow has so well brought out.

Dr. Hans Schroeder, (New Orleans): I would like to ask the essayist how he reconciles his treatment of hyperthyroidism with the recent statement by Crile (J. A. M. A. 104:978, 1935) that he removed the symptoms of the disease by section of the sympathetic nerve to the adrenals.

Studies of hyperthyroidism seem to indicate that it is a disease of the lymphatic system. Nordmann (Virchows Arch. f. path. Anat. 267:158, 1928) found the lymph sinuses congested and narrow in uncomplicated cases, and believes it is a disease of the blood stream.

Viale (Arch. di fisiol. 25:422, 1927) demonstrated choline in lymph glands chemically. This, he believes, comes from the adrenals or is an intermediate metabolic product of lecithin, which again is regulated by way of the hormones of the adrenals.

In another paper Viale (Arch. di fisiol. 25:619, 1927) states that the adrenals are important not only in the lymphogenesis, but also in the composition of the lymph. In the lymph of animals without adrenals there is less glucose, diminution of cholesterine and choline, and slight modification of the lecithin.

This choline action of the lymphatics has been reported by others as well, among them are Biedl and Offer (Wien. klin. Wchnschr. 20:1530, 1907) who mention the Ehrmann reaction, in which the instillation of lymph into the eye hinders the mydriatic effect produced by adrenalin.

Wirth, (Biochem. Ztschr. 32:245, 1922) however, claims that the antagonism to adrenalin cannot be plainly stated, and that such antagonism is not general.

Dr. J. D. Young (Shreveport): This is out of my line, but I want to bring out one point that Dr. Barrow brought out in his paper that is rather important, I think. That is, in many cases of thyrotoxicosis you have other agents acting.

A short while ago a patient was referred to me with epidemic encephalitis. The patient improved

under treatment, and went from 91 pounds to 140 pounds. He came in one day and asked if he could go fishing the following day, and I told him he could. To my surprise, the next day he reappeared at the office with a marked enlargement of both lobes of the thyroid gland, which was not present previously.

This patient had had basal metabolic rates done on him on two or three different occasions prior to this, and they were minus. That day I referred him to Dr. Barrow, and the next morning the basal metabolic rate was done, and, if I am not mistaken, it was plus 95, a condition of acute thyroiditis.

Due to this patient's general condition, we decided to have Dr. Barrow treat him with the roentgen ray. The patient immediately began to improve, but the basal metabolic rate did not return to normal as rapidly as we felt is should, although the patient's tremor and pulse improved, and the marked enlargement of the thyroid disappeared. Dr. Barrow felt that perhaps there was some other etiological factor in this case, so the patient was referred back to me, and then again he was placed on intensive treatment for encephalitis, and after a period of about six weeks his basal metabolism returned to normal, the pulse was normal, and the patient made an uneventful recovery.

I just wanted to bring that fact to your attention, as Dr. Barrow stated in his paper that the case of thyrotoxicosis should be carefully examined and all types of infection removed when present, and when they do not respond to the radiation therapy look for something else perhaps as an exciting cause in these cases.

Dr. S. C. Barrow (Shreveport): Gentlemen, I think the voltage used in the cases is immaterial. I think you can do the same with a low voltage as you can with a high voltage. Where I have convenient access to the patient every week, I use the lower voltages. Where they live at a great distance and it is hard for them to come, I give them the intensive high voltage doses.

I did not refer to the treatment of any cases of thyroid disease except hyperthyroidism.

The Doctor asked me how I reconciled what I said to Dr. Crile. I cannot reconcile what I said with what Dr. Crile said because he does not agree with himself. Dr. Crile is not treating his goiters that way. He has treated twenty-eight of them, as I get the report, that way, and does not recommend that treatment. But he is still taking them out in the usual old way.

When we get off into the glandular field, we get lost pretty quickly. If I could treat my pelvic cases by treating the head, or treat my thyroid cases by treating the head, it would simplify matters a whole lot. But when we do that, we no doubt do something else. If he is going to operate upon anything he had better operate on the thyroid gland. That is what he is doing now. That report you had is just experimental work. He does not put it out as a method to be followed.

RECENT DIAGNOSTIC AND THERAPEUTIC ADVANCES IN PERIPHERAL CIRCULATORY DISEASE*

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There is today a growing conviction that peripheral vascular disease, which was formerly considered to be the concern of the surgeon only when its end result, gangrene, had come to pass, offers a wide and as yet an almost untouched field for the application of the principles of preventive medicine. Many times, of course, amputation is still the only resort, and nothing is gained by not facing that fact. The individual who is to be saved from mutilation or worse must be saved before and not after gangrene has set in. Amputation is all that is left when the degree of circulatory impairment outstrips by too wide a margin the development of an adequate collateral circulation, or when a virulent spreading infection gains a foothold in an extremity with a deficient vascular supply. Under such circumstances life must be set above limb, and radical treatment must be resorted to without hesitation or delay.

Before gangrene has set in, however, the situation is very different, and conservative measures are both desirable and possible. They are particularly applicable, as Mont Reid points out, to three groups of individuals, those who are living in complete ignorance of their disease, those who are aware of their disability but who are being treated on an incorrect diagnosis, and those whose disease is recognized and who by intelligent care can be tided over the crisis in which, in another day, amputation would have been the first and only thought.

Three main trends are noticeable in peripheral vascular disease, the first of which involves its

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proper classification. There are two main groups. The first includes diseases fundamentally organic in origin, such as arteriosclerotic and diabetic occlusions, and the second diseases fundamentally vasospastic in origin, such as Raynaud's disease and scleroderma. A third ill-defined group which, as Reid points out, is not yet correctly classified, includes such diseases as thrombo-angiitis obliterans, which partakes of the characteristics of both the organic and the vasospastic groups, and shows evidence of being inflammatory in origin. The importance of this new conception of peripheral vascular disease, with its more or less clearcut separation of the etiologic factors, will be apparent when the question of therapy is considered somewhat later in this paper.

The second notable advance in peripheral vascular disease has to do with diagnosis, chiefly the increasingly accurate use of the oscillometer and the demonstration of the state of the circulation by means of arteriography. Since the introduction of stabilized thorium dioxide (thorotrast, Heyden), there has been available for the latter purpose a painless and non-irritating agent, which we ourselves have employed for the last two years in something over 300 cases. We have devised and recently described a simple, one-person technic for its use, and in several previous communications we have pointed out its advantages. We have employed it, to date, in all types of peripheral circulatory disease, as well as in aneurysms, primary axillary vein thrombosis, arteriovenous fistulae, and extravascular tumors, finding it of value in all of these conditions, and without ill effects of any sort.

We agree with Allen and Camp, the pioneers in this country in the use of thorotrast, that arteriography is usually an adjunct procedure rather than an absolute diagnostic necessity. If the proper history is taken, the proper physical examination made, and the routine tests employed, there is no doubt that the experienced observer can reach a diagnosis by clinical inference in the majority of cases of peripheral vascular disease. On the other hand, it is possible by this method to secure minute details of the state of the vascular tree which no other method reveals. It is evident, therefore, that arteriography is of value in the diagnosis of obscure cases of advanced disease, and particularly in the type of case upon which the modern surgeon places so much emphasis, the case in which the clinical signs are still vague and in which preventive measures can achieve their most brilliant results.

We have used this method routinely for determining the lowest limits of adequate circulation, and have found it, as we have recently pointed out, far more accurate than either the histamine or the salt solution test, though we have as yet had no opportunity to compare it with the oscillometric test. We are not inclined to attribute only to this method the decreased mortality which our service has recently been able to show after amputation for gangrene, for too many other factors play equally important or more important parts. The fact remains, however, that our mortality has markedly improved, and we think it is at least partly because, since we have used arteriography, we feel that we can amputate at a lower level with greater assurance of safety than ever before, and with a smaller percentage of recurrent gangrene.

We have also been able to show by arteriography that in a certain percentage of cases of gangrene of the lower extremities amputation at any level is a hopeless effort from the outset. The arterial changes in such cases can well be compared to the changes seen in the arteriosclerotic kidney, in which the degree of renal occlusion and the degree of impairment of renal function exactly parallel each other. An analogous condition exists in certain cases of senile arteriosclerosis of the extremities. There is a gradual obliteration of the arterial trunks, the collateral circulation is insufficient to compensate for it, and gangrene finally sets in. In some cases amputation, always at a high level, is practical. In others, as arteriography clearly shows, the degree of arterial occlusion is so great and the compensating collateral circulation is so inadequate that recurrence of the gangrene is inevitable, regardless of the level of amputation. In other words, a true state of inoperable gangrene exists, and the surgeon will have the support of visible evidence should he refuse operation, or the poor consolation of knowing, if he does resort to surgery, that he cannot blame himself unduly if the pa-

tient loses his life as well as his limb, since all the dice are loaded against him.

Arteriography does not differentiate between occlusion by spasm and occlusion by organic disease, unless, as has been our recent practice, an endeavor is made to overcome possible spasm. With the addition of this precaution, such a differentiation has proved to be perfectly practical, and we propose to follow this plan routinely in the future in any case in which spasm is evident or suspected.

The third trend in peripheral vascular disease is along the lines of therapy, and it begins in a very simple fashion, with the use of prophylactic measures which have long been employed in the care of diabetics, and which have proved applicable to all varieties of circulatory pathology. Scrupulous cleanliness, the avoidance of trauma, of infection, of extremes of temperature, and of positions inimical to the vascular supply, the proper care of the skin, the use of special exercises such as those devised by Buerger and Allen, and attention to the general health and hygiene, are all measures which can be carried out by the patient himself, and will be carried out if once the proper rapport is established between his physician and himself. The restriction of tobacco is also important, the harmful effects of which on the vascular supply of the extremities has recently been convincingly demonstrated by Maddock and Coller. Moreover, as Reid emphasizes, almost the first thing that a physician should do for his patient is to determine with him and for him the level of optimum circulation in the extremity, which is usually just above the heart level.

The application of heat in various forms, the administration of such drugs as histamine, theobromine, and certain of the choline derivatives, and the use of contrast baths are all of value in relieving pain and relaxing spasm. We have personally used, with excellent results in the relief of night pain, the simple method of reflex vasodilatation described by Gibbon and Landis, the immersion of the upper extremities in water at a temperature of 45° C. The relief of pain, we would emphasize, is one of the most important considerations in peripheral vascular disease, and many an amputation, particularly in Buerger's disease, has been done because the physician failed to realize that fact. Samuels, who has recently reported 300 cases of this disease treated by conservative measures, with amputation in only one instance, believes that pain is never a reason for amputation, and accepts as an indication for such surgery only so complete a destruction of the extremity that a weight-bearing stump is unattainable.

The most important surgical advance in the therapy of circulatory disease of the extremities is the use of sympathectomy or ganglionectomy in those cases in which, as a result of careful classification, the factor of spasm can be clearly demonstrated. The results of these procedures correspond with astonishing accuracy with the results of the prognostic tests without which such operations should never be undertaken. These tests, some of which have a therapeutic value also, include the injection of foreign proteins, particularly typhoid vaccine, to produce hyperpyrexia; the use of spinal and general anesthesia; the method of Gibbon and Landis, already described, of immersing the forearms in hot water; or the Pickering and Coller test, which consists merely of wrapping the patient in blankets. The use of such measures, in conjunction with arteriography, will supply an even more definite prognosis for the neurologic surgery proposed, since it will supply visual evidence of what is happening within the blood vessels.

Sympathectomy is not indicated in any condition in which the factor of spasm is not clearly proved. Furthermore, its permanent and irreversible character must be comprehended, as Lehman has pointed out, as well as its possible effect on the individual's ability to meet future physiologic emergencies. As this author well puts it, we must avoid developing a race of individuals freed from their complaints but suffering from the results of their therapy.

In conclusion, we would mention the group of patients, in one sense the most important of all, who are subject to what may be termed recurrent attacks of vascular occlusion. Gradual occlusion of the arteries can be withstood in most cases, for the collateral circulation develops parallel with the pathologic process, but when abrupt occlusion occurs, the nourishment of the extremity is suddenly jeopardized. Such

occlusion constitutes an acute emergency and demands emergency measures for relief. If an embolus is the cause, as can now be positively determined by arteriography, embolectomy is justified, for loss of life or at least of limb is inevitable if less drastic measures are adopted. Most patients, however, can be carried through the emergency by other, less radical measures. These include absolute rest, the use of superheated air, hypodermoclysis with Ringer's solution, the intraduodenal administration of large amounts of hypertonic salt solution, the intravenous infusion of such agents as sodium citrate, and, in particular, the use of alternating positive and negative pressure by means of the Pavaex machine devised by Herrmann and Reid or the similar apparatus recently described by Landis and Gibbon.

How these measures are to be used, in what combinations and for what conditions, must be the decision of the individual physician after his study of the individual patient. The important thing to realize is that the new conception of peripheral vascular disease implies the consideration of the patient with this disease as an individual who can be spared much, if not all, of the disability and mutilation that formerly was inevitable in it. The brilliant results secured by the Cincinnati and Philadelphia groups, as well as by many others, are a challenge to all surgeons everywhere to duplicate what they have done, an achievement that is not impossible if the diagnostic and therapeutic advances we have outlined in this brief communication are consistently and properly employed.

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DISCUSSION

Dr. Ambrose H. Storck (New Orleans): I will limit my discussion to the ischemic crises that occur in peripheral arteries, emphasizing the importance of early recognition and vigorous application of one or more of the several methods of treatment that are now available.

Unfortunately, many patients do not seek medical attention until a vascular crisis occurs, and it may be necessary to institute treatment immediately. The immersion of the arms in warm water for the purpose of inducing reflex dilatation of the vessels in the lower extremity and the application of dry heat, alternate elevation and lowering of the extremity above and below the level of the heart, and the administration of large amounts of fluid are all methods that may be applied simultaneously or in succession when the patient is first seen. At times the early administration of such drugs as scopolamine, theobromine, or choline preparations may seem advisable and prove of some benefit. Besides those methods which require no special equipment, there are two other important methods of treatment which if applied early may provide tremendous benefit in preserving a limb in which an acute occlusion of a major blood vessel has occurred; i. e., the application of alternating positive and negative pressure by means of such an apparatus as the Pavaex designed by Herrman and Reid, or the injection of the appropriate sympathetic ganglia with alcohol. Unfortunately, the apparatus for furnishing alternating positive and negative pressure is not at present generally available.

The injection of the lumbar or cervicodorsal sympathetic ganglia can be done without delay almost anywhere, and all that is required is a spinal puncture needle, a syringe, alcohol, familiarity with the method, and facility in making the injections.

There has been much controversy in regard to the efficacy of interrupting the sympathetic outflow in obliterative vascular disease. It has been argued that the lack of satisfactory end-results, or the recurrence following sympathectomy or sympathetic block, makes such procedures almost-

worthless, but it is certain that early sympathetic injection or sympathetic resection will tide many patients over an ischemic crisis. Some of the poor results following procedures directed toward the sympathetic nervous system have unquestionably been the result of inadequate or improper execution of the methods.

Another type of procedure that I think deserves mention is the alcohol injection of peripheral mixed nerves, which has been employed in peripheral vascular obliterative diseases for the relief of pain. To begin with, in exposing the nerves, damage is often done to nearby main vessels, capillaries are destroyed, and, furthermore, the procedure deprives the patient of the protection afforded by sensation.

In cases of peripheral vascular disease in which it becomes obvious that amputation will be necessary, it is usually advisable to perform the amputation within a few hours, because of the danger of rapid development or progression of infection in an ischemic extremity.

Dr. Isidore Cohn (New Orleans): They say it is a difference of opinion which makes horse race betting.

For the last year it has been my privilege to have the opportunity to treat many cases of vascular diseases involving the extremities after the plan suggested by Herrmann and Reid, with the so-called Pavaex outfit. One of the interesting things I have observed is not the crisis, not the fact that the patients come late, but when they come fifty per cent of the patients have been under treatment for long periods of time for flat feet and other conditions. The actual cause of the pain in the extremities has not been recognized. I do not believe that it is fair for us to put the entire blame on the patient, but we ought to understand that some of the blame is our own. Lack of careful, complete examination of the extremities is responsible for failure to diagnose the condition.

Again I should like to say that I believe that the old term "peripheral vascular disease" is a term which we should discard. The manifestations which are peripheral in character are simply manifestations of a general disease involving the entire vascular tree. The vascular manifestations which we notice in the extremities are found even in the coronary vessels, and in a fair percentage of the patients who have died, evidence of disease of the same type, histologically, as found in the extremity is found in the coronaries.

The important thing is to improve the collateral circulation in every way possible. When it comes to spastic conditions, such as Raynaud's disease, it is all right to consider the use of sympathectomy but where the vessel walls already have evidence of changes in them, such as we find in Buerger's disease and arteriosclerosis, the removal of the sympathetics will not cause a dilatation of these vessels.

When one begins to talk about these sympathectomies, we are dealing with structures close to the aorta, and it is not an operation to be taken too lightly. I do not care who the individual is, sometime something is going to happen, and if we do a major procedure in a patient who might have otherwise been treated by a simple procedure and he dies, we have something to account for.

The method of treatment as suggested and popularized in the last few years by Louis Herrmann and Mont Reid is no new procedure. The glass boot used was suggested by Junod at the University of Paris in 1835. While we are applying something new because we have electrical current to give us a negative and positive pressure, we are not applying a new principle but simply making use of those things which advanced civilization has helped to bring to our command for the treatment of our patients.

During the last year it has been my privilege to treat forty-five or fifty patents with diabetes, arteriosclerosis, Buerger's disease, and cases of fractures, and other things of that kind, where persistent swelling has occurred. I have at least three or four patients that I believe a year or two ago I would definitely have amputated their legs, and those patients are walking now on good limbs. Anything that offers an opportunity such as these tests that Dr. Veal has given us, and such mehods as Louis Herrmann and Mont Reid have given us, should be used before surgery is undertaken. Effective simple measures for developing collateral circulation are more to be desired than surgical procedures which carry their own mortality.

Dr. D. I. Hirsch (Monroe): In the consideration of any subject, especially one as important as this, we should have a classification into which any of the cases will fall.

The one I use is the arteriosclerotic, inflammatory, neurogenic, and embolic.

I have had considerable experience with these cases myself, and though not fortunate enough to have a Pavaex machine with which to treat them, I believe that all of these cases eventually wind up with surgery of some kind.

There is one symptom that I note the doctor neglected, and that is pain. One of the early symptoms of these cases is cramps in the legs (and hands) that the patient has at night or while walking; these people come to you with no circulation, no pulsation in the extremities, which are very cold and clammy; it is amazing that they are able to walk.

As to the question of treatment, the application of roentgen ray over the suprarenals, whisky and papravine hydrochloride, are vaso-dilators worth while trying.

You can safely carry these cases along with a

dry gangrene for considerable time, but the moment you have a superimposed infection with swelling, the quicker you amputate the safer it is for your patient.

These cases are hard, they tax your thinking capacity. The diagnosis is simple enough and can be made in the office. The classification is one which at times is speculative, and the treatment is different according to classification.

I had a recent experience with a case of Raynaud's disease which was peculiar. This case was sent to Tulane University Clinic where the sympathetics were injected with novocaine and the patient relieved temporarily. Later the right stellate nucleus was removed and the patient returned to me. He had a recurrence. I injected the left side and in attempting to inject the right side, some of the fluid entered the pleura and I had to stop.

This man made an uneventful recovery and I believe would have gotten well if we had done nothing for him surgically.

These cases are much more frequent than we would suspect.

Since our attention has been called to these cases by this most instructive paper of Dr. Veal's, I think we should have a common nomenclature or classification, the number of subdivisions makes no difference, for any of them will fall into one of the following headings, inflammatory, arteriosclerotic, neurogenic or embolic.

Dr. Rudolph Matas (New Orleans): As a pioneer worker and contributor to the advances which, in the last three decades, have developed the study of the peripheral vascular diseases into one of the most fruitful fields of clinical investigation, I appreciate the personal invitation of the chair to participate in the discussion of Dr. Veal's important paper. Dr. Veal deserves every encouragement and praise for the excellent way in which he has utilized the great opportunities offered by the Charity Hospital for the study of these diseases, and particularly for his own very creditable and original work in angiography with radio-opaque solutions. As the time is too limited to discuss Dr. Veal's paper in all its phases, I will confine my remarks to angiography, and especially to arteriography, as this is the salient feature of his communication.

Of course, no one questions at this late date that angiography, by which we mean the visualization of the blood-vessels by the injection of radio-opaque solutions,—is one of the most notable acquisitions of contemporary surgery for the clinical study of the anatomy, physiology and pathology of the vascular system; but, while recognizing its undoubted utility, we must be careful not to exaggerate its importance or to regard it as a method that can be adopted indiscriminately as an innocuous routine procedure. I am pleased that Dr. Veal, despite his notable success, has prudently recognized the limitations of the method (especially of arteriography) and cautioned against its use or abuse in inexperienced hands. We must bear in mind that the injection of an artery such as the common femoral, the carotid or the subclavian, is in itself a surgical operation, whether this be done transcutaneously or by open exposure of the artery itself,—let alone the abdominal aorta, when attempts have been made to inject this great vessel by the posterior lumbar or paravertebral route, as this has been done repeatedly by Reynaldo Santos and his associates of the Portuguese school, who are the leading innovators and specialists in this practice. Nor will I include in this discussion the method of cerebral arteriography by carotid injection devised by Egaz Monz, a leader in the same school, for the diagnostic differentiation of cerebral tumors and other lesions. Suffice it merely to mention these methods of intra-arterial investigation to realize that they are out of reach of ordinary practitioners and that, despite the success that they have attained in the hands of these remarkable specialists, they must still be regarded as too adventurous and debatable to be included in the present discussion.

There is enough material left for serious reflexion in the application of arteriography to the diagnosis, prognosis and therapy of the vascular diseases of the lower extremities. In regard to the injection of the common femoral artery, for example, we must look upon this as an operation which may be followed by consequences that entirely overbalance any benefit that might accrue from the procedure. This is particularly true of the punctures made into the artery transcutaneously. There are now a sufficient number of reported cases to show that the damage done to the artery by ineffectual attempts to enter its lumen may be sufficient to compel the ligation of the artery, or to cause its thrombotic occlusion, with gangrene of the distal parts, as a sequel. Again, there are cases in which the radio-opaque solution has missed the artery and has been injected into the perivascular tissue where it acted as a caustic, causing necrotic cellulitis, and death by secondary infection. And this is particularly true of the diabetic and aged arteriosclerotic subjects of feeble resistance. These accidents are, unfortunately, most likely to occur in the very subjects in whom the danger of ischemic necrosis is greatest, and in whom the arteriography is most frequently indicated and applied. It is also important to remember that no radio-opaque fluid, no matter how benign its reputation, even to Thorotrast (thorium dioxide) which is justly regarded as the least (locally) offensive of these agents, is not constant or invariable in its effects. It is not so much the solution, but the artery into which it is injected, that determines its reaction.

A compound such as Thorotrast, which is tolerated with seemingly perfect impunity by a large number of patients, will cause in others intense angiospasms and permanent endothelial lesions; and this is particularly true of those whose vascular endothelium has been highly sensitized by pre-existing arterial disease. Such are the patients suffering from chronic senile or presenile arteriosclerosis, diabetic, syphilitic or other toxic and infectious types of endarteritis, thrombo-angiitis obliterans, Reynaud's disease and other vasospastic disorders. Furthermore, the reactions of veins cannot be compared with those of the arteries which are so exquisitely sensitive to any alteration in the composition of the circulating blood. We know how infinitely more tolerant the veins are to all sorts of solutions; yet we know also how easily they are obliterated by relatively mild hypertonic solutions of sugar and salt; and how frequently veins become obliterated by repeated injections of Salvarsan and other arsenical solutions, to the extent that new veins have to be selected because those first injected have been obliterated. These facts, however, do not prevent us from using intravenous injections constantly for purposes of medication. But this relative tolerance of the veins does not apply to the arteries; for, in these, no solutions, even those which approach nearest to the physiological formulas of the serums, are free from reactions, more or less intense and durable, when injected with heterogenous solutions. The great number of formulas that have been tried for radio-opaque visualization since Sicard and Forestier first introduced lipiodol in 1923, including Brook's 100 per cent solution of sodium iodide, the 25 per cent solution of the same salt used by the Portuguese angiographers, the Japanese lecithin-lipiodol compound, "l'ombre", and still other solutions and colloidal emulsions of organic iodine derivation (abrodil, and uroselectan, for intravenous pyelography; tenebryl and parabradyl, and still others with different trade names) have all been abandoned in favor of Thorotrast. But even this substance, despite its relative painlessness, tolerance and low angiospastic effect, has its decided limitations. It is perhaps relatively safe when injected in normal, young and healthy human arteries, but never certain in the diseased or degenerated arteries of the aged or those whose arteries have been sensitized by pre-existent arterial disease. The latent or delayed dangers of thorotrast, due to its specific affinity for the reticulo-endothelial system and its fixation in the liver, spleen, bone marrow and lymphatics, limit its application to small doses, not to exceed 30 c.c., but even in these doses disastrous effects have followed its injection in arteriosclerotic subjects and other arteriopaths. The very thorough discussion at the French National Surgical Society at Paris, and particularly in the proceedings of last February, quite suffice to show that thorotrast, even when injected in proper doses, is far from being an innocuous substance or an ideally safe agent for arterial visualization. It cannot be denied, however, that, since thorotrast has come into general and more discreet use, the number of accidents and complications that were so common when the iodine salts and derivatives were in vogue, have greatly diminished, and in consequence, the practice of arteriography has been much encouraged and developed.

My own experience with arteriography has been limited almost exclusively to the study of aneurysms. My first injection goes back to August 5, 1932; the patient was a robust young man of 27 years, who had a very extensive cirsoid aneurysm, caused by an accidental blow, which involved the left half of the face and scalp. This was an unusually favorable case for a radio-opaque visualization. Not having a supply of thorotrast at hand, I used a standardized manufacturers' solution of Neo-Iopax (uroselectan) an iodine derivative which had been used for intravenous pyelography, with apparently no ill effects. The patient was brought to the roentgen ray laboratory and one of the most prominent ampullar dilatations of the tumor selected for the injection. I had scarcely injected 1½ c.c. of the solution when the patient gave a scream of pain and fell back in a faint. Simultaneously, all the vessels which constituted the tumor were immediately transformed into hard, rigid and pulseless cords. The pain was so intense that the patient fell into collapse, which compelled me to desist from further attempted injection. The injection had evidently provoked a violent angiospasm which had arrested all the circulation in the arteriovenous tumor. It was fully one hour before the pain subsided and the patient recovered his senses. It seemed incredible that such a small quantity of the injected fluid should have caused such a violent and alarming vasospastic reaction. It was evident that, while the same substance was well tolerated by the veins, it was extremely irritating to the arteries. A radiograph taken 20 minutes after the injection still showed faint but clear traces of the opaque solution in the angioma. The patient was successfully operated and completely cured by an extensive scalp lifting operation which is fully described in the South. Med. Jour. for Sept., 1933. In contrast with this experience, I injected the internal carotid (May, 1934) with thorotrast for the purpose of localizing an obscure arteriovenous fistula in the intracranial internal carotid tract. In this case the injection caused no

pain or angiospasm, but it failed to give a clear view of the fistula, and only a blurred shadow in the temporal fossa at the base of the skull, which gave no clue to the exact seat of the arterio-venous anastomosis. In this case 12 c.c. of the thorotrast were injected, and no ill effects followed, despite the ligation of the internal and external carotid at the bifurcation. The operation was performed under local anesthesia, and the injection was given into the artery completely exposed by dissection. The only fault found with the arteriography in this case was its failure to reveal the seat of the fistula.

I have tried to inject aortic-thoracic aneurysms in two instances with large projecting sac, which bulged through the chest wall. In these cases it was especially desirable to exhibit the relations of the sac to the aorta, and particularly to define the seat and size of the orifice of communication with the aorta, as a preliminary to wiring the sac with Colt's apparatus. As in these cases the aortic stream cannot be controlled, the opaque fluid was washed away as fast as it was injected and failed to give the desired information, at best no more accurately than that given by the plain radiographs or the fluoroscopic screen.

In dealing with aneurysms of the extremities, particularly of the ilio-femoral and popliteal tracts in which the circulation can be controlled, and a view of the vessels can be obtained with relatively small doses of the thorium dioxide, the results are far more satisfactory, often brilliantly diagrammatic; but, even here, there are fallacies of interpretation in the most perfect films which make it impossible to depend upon them exclusively as criteria for the viability of the limbs after operation.

As applied to the lesions and diseases of the peripheral blood-vessels, especially those of the lower extremity, it is a most valuable addition to our diagnostic resources. It has already rendered very valuable service and has come to stay, but, in its present state of development, it has distinct limitations and objections which will probably be removed when a safer radio-opaque medium is discovered that will retain the advantages and eliminate the disadvantages of thorotrast. In the light of the collective experience thus far obtained, angiography and especially arteriography must be regarded solely as a valuable adjunct to and not as a substitute for the methods of clinical research that are now available for the study of the peripheral vascular diseases. It should not be resorted to as a routine procedure, and only utilized in doubtful cases when other methods fail to give the desired information. In all ischemic states in which the vitality of the limb is obscurely or manifestly compromised and gangrene is impending, the injections can only confirm a clinically manifest fact without benefit to the prognosis, and perhaps serve only to precipitate vascular reactions that will or may aggravate existing pathology.

There are other fallacies of interpretation and critical commentaries that apply to the value of angiography as a preoperative guide to the proper technic of the arterio-venous as well as the arterial aneurysms, but I cannot engage in these details without prolonging this already too lengthy discussion.

In conclusion, I recognize arteriography as a great advance in the methods of exploration of the vascular system which is pregnant with possibilities of far greater usefulness. Its history, however, is now only in the making and has not reached that stage of perfection or security that would justify its adoption as a routine procedure. The time has not come when we can visualize the arteries with anything like the simplicity and safety with which we can radiograph the limbs which they nourish. The numerous collective statistics that tell of its simplicity and safety cannot be accepted on their face value. A careful analysis of the individual cases would show, and has shown, not only numerous failures, but many narrow escapes from disastrous complications; many aggravations of preexisting ischemic disorders, and many amputations hastened which it is the purpose of the method to delay or to prevent.

Arteriography cannot be regarded as an exclusive method of exploring the resources of the peripheral vascular system. It can only be regarded as an adjunct to the existing effective and tried clinical methods of investigation. It should never be undertaken without a definite objective, intended to supply information that is not available by other methods. In every case we should ask, how much benefit to the patient can be reasonably expected from this procedure? Is the information that it may yield commensurate with the risk involved?

There can be no objection to the method when it promises to yield information of positive therapeutic or surgical value; there is objection when it is applied solely for anatomical or scientific gratification or to complete the clinical record of an interesting case. It is devoutly hoped that time will soon come when an angiograph will be taken with as much impunity as a radiograph; but not yet.

Dr. J. Ross Veal (New Orleans, closing): I have not meant to convey the impression that we consider puncture of the artery and injection of a foreign substance a procedure entirely free from danger and to be lightly undertaken. On the other hand, we have selected the patients very

carefully and have followed them with equal care. In the several hundred cases in which we have employed this method, we have not seen any gross damage to the vessels themselves, and the patient suffers little discomfort, immediate or remote, if the injection is properly made. The greatest danger in the method is the retention of the substance in the reticulo-endothelial system, but we believe the small doses which we use guard against this risk. All our doses are far below the lethal dose and far below the point of danger. For the upper extremity 4 to 5 c. c. is sufficient for visualization of the vessels, and the dose for the lower extremity does not exceed 20 c. c.

I should like to stress that we have used arteriography in the study of all varieties of peripheral vascular disease, and have found it of diagnostic and prognostic value in many cases.

Dr. Hirsch, I believe, made the point that even if patients are tided over their first crises, they eventually succumb to gangrene. This is not true in the patients in this group whom we have been studying for the last three years, most of whom are markedly improved. Some patients who could not walk a block without pain when they first came to the clinic now can walk twenty-five or thirty blocks. We think these patients are fairly safe, and if they can be protected from infection their chances are certainly good.

HEMATURIA*

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Blood in the urine is usually significant of some grave disorder in the urogenital tract. In the majority of cases, it is the earliest symptom of a pathological condition, the early and exact diagnosis of which is of paramount importance. It is urged, therefore, that all cases of hematuria be subjected to careful study at as early a date as possible following the initial bleeding, lest the insidious onset of a disease curable in its earliest stage should be missed and a life sacrificed by incompetence or neglect.

The time to examine the patient with hematuria is at the time of his bleeding. This is particularly important in patients whose hematuria is of renal origin. The postponement of the examination in this type of case until the urine is clear may very considerably add to the difficulties of diagnosis. Much valuable time may be lost and unnecessary instrumentation carried out before the diagnosis is made. There will, of course, be very definite exceptions to the rule, particularly in those cases of associated acute infections of the lower urinary tract. Hematuria of varying degree is common in acute posterior urethritis of gonorrheal origin. In such a case the history, the associated symptoms and the urinary findings make the diagnosis obvious. In other cases, however, presenting no contra-indications to instrumental investigations, delay is indefensible.

Before proceeding with the examination, it is well to take into consideration certain associated factors. A family history, particularly as concerns carcinoma, tuberculosis, and hemophiliac tendencies, may furnish valuable leads to diagnosis. The idiosyncrasies of certain individuals to various drugs and chemicals should also be borne in mind. A careful personal history will often elicit certain associated symptoms which direct particular attention to a certain portion of the urinary tract. Thus a history of gradually increasing obstruction to urination and urinary frequency, particularly in the early morning hours, coupled with hematuria, naturally directs attention to the prostate. Similarly a history of former attacks of renal colic, with or without associated hematuria, is highly suggestive of calculus in the ureter or renal pelvis. A not uncommon syndrome observed in young men, consisting of daily frequency of urination, premature ejaculation and terminal hematuria, occurs in certain cases of posterior urethritis, the source of the bleeding in this instance usually being an enlarged and much congested verumontanum. Such diagnostic leads should be regarded, however, as helpful only in so far as they direct attention to a particular level of the tract. The evidence furnished by the symptomatology in a given case is at best presumptive.

I have had opportunity to make complete urological investigation in a series of cases of hematuria. In this series, the distribution of the lesions causing the hematuria was as follows: 41 per cent of the hematurias were caused by lesions of the kidney and ureter while 59 per cent came from the bladder, prostate and urethra.

The importance of hematuria as a symptom

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*Read before the Louisiana State Medical Society, New Orleans, April 29-May 1, 1935.

of neoplasm of the genito-urinary tract again becomes impressive when we note that, even in so small a series of cases, the hematuria was due in 22 per cent to malignant disease, and in an additional 7 per cent to a condition potentially malignant. Thus hematuria in one case out of four indicates a malignant disease of the genital or urinary organs.

In 25 cases in this series the origin of the bleeding was the kidney or ureter. There were 5 cases of posterior urethritis and verumontanitis; 1 case of urethral stricture; 1 case of tuberculous cystitis; 1 case of urethrotrigonitis; 1 case of hydronephrosis; 2 traumatic cases; and 1 case of papillary cystitis. Three cases were hypernephromata, "the most common renal neoplasm"; all of them were far advanced when nephrectomy was performed. The results following nephrectomy in early hypernephromata are excellent, but unfortunately in all but exceptional cases the tumor is most extensive when it is first recognized. This is due largely to the difficulties of diagnosis. In the early case there is little or no appreciable change in the size of the kidney, the renal function shows little or no impairment and the deformity of the pelvis, upon which the diagnosis is largely based, is not present.

Not infrequently these early cases of hypernephroma, in which all tests and investigations show no abnormality other than the presence of blood, are classified as idiopathic hematurias. The author feels that this diagnosis should be made only after a most careful and exhaustive study and then with considerable reservation. It is probable that if some of these undiagnosed renal hematurias were surgically explored shortly after the initial bleeding, many more early hypernephromata would be discovered.

In this series of cases, there were 18 cases of calculus; 9 in the kidney; 6 in the ureter and 3 in the bladder. The presence of stone in the kidney or ureter is certainly not always an immediate indication for surgical treatment. It is certainly true that many of the small stones pass either spontaneously or following suitable instrumentation. When the size of the stone is such as to permit its passage and repeated examinations reveal a definite progress toward the bladder, it is perfectly safe to temporize with the case. In cases, however, in which the stone in the ureter is of a size which will prevent its passage through the mural portion of the ureter, or if it is incarcerated and fixed at a constant level in the tract, operation should be resorted to for its removal. The treatment to be recommended in renal calculus will depend in large measure upon the size of the stone, its location, the degree of obstruction it is causing and the presence or absence of infection.

Stones which lie in a position to interfere seriously with the normal emptying of the kidney should be removed surgically, and this is particularly true when there is a complicating infection.

There were two cases of renal tuberculosis in this series of cases. The finding of the tubercle bacillus from one side is not necessarily an indication for an immediate nephrectomy, providing the bladder has not suffered involvement and the pyelogram shows no evidence of a definite cavity formation. In cases, however, in which the bladder symptoms are severe the removal of the renal focus is indicated, because of the risk of irreparable involvement if the focus in the kidney is allowed to remain. Experience has shown that when cavity formation in the kidney has been demonstrated, nonsurgical methods of treatment are unavailing.

There was one case of sub-mucous fibrosis. This interesting condition produces all of the symptoms of an intense cystitis. The urine, however, is usually clear and not infrequently negative microscopically. The bladder capacity is small (50 to 100 c.c.). The bladder mucosa is normal when not distended. With overdistention the mucosa is torn and bleeding results. It is treated by high frequency current applied to the lesion.

In this series there were 17 cases of benign prostate hypertrophy and 4 cases of carcinoma of the prostate. The benign forms more frequently produce hematuria than the malignant, which is due to the fact that, in the majority of cases, carcinoma begins in the posterior lobe at a considerable distance from the urethra and vesical orifice, whereas in the benign hypertrophy the tumor lies just beneath the mucous

membrane which not infrequently becomes congested during the straining efforts of urination and bleeding results.

There were 16 bladder tumors, of which 12 were non-infiltrating and 4 infiltrating. All of these, if not actually malignant, should be considered potentially so. The more or less general confusion among urologists regarding the treatment of bladder tumors is in large measure due to their classification. In my own experience, the most practical classification is based upon whether or not the tumor is infiltrating. In the non-infiltrating varieties practically all will respond to endovesical methods of treatment, which consist of surface application of radium, the application of the high frequency current or both. While the proportion of non-infiltrating tumors will vary somewhat depending on the series, they usually range between 40 per cent to 50 per cent. The results of treatment on the non-infiltrating varieties are excellent in so far as the destruction of the primary tumor is concerned. In the infiltrating type, it is futile to attempt treatment by non-surgical methods. If possible, resection should be carried out as this method of treatment offers the greatest prospect of success. This is possible in comparatively few tumors of this type, because of their extent and location and the results in the vast majority of cases are most unsatisfactory. I really think there is no doubt but that the time element has a great deal to do with the curability or incurability of bladder tumor and that the chances for cure are inversely proportional to the age of the tumor. There are no doubt cases of tumor which give no warning of their presence until they are definitely infiltrating, but I am sure that the investigation of the bladder tumor case which is carried out very promptly after the initial bleeding will, in the majority of cases, prove to be the type which is responsive to treatment. I always check these bladder tumor cases every six months or oftener if I think it advisable.

If I could impress upon every man practising medicine the fact that in 50 per cent of all cases hematuria is produced by tumor and that a large majority of these cases are malignant or potentially malignant, we would do more to reduce our cancer mortality and morbidity than can possibly be done in any other way.

In concluding, I wish to say one cannot procrastinate with hematuria. It is a symptom demanding immediate, careful and complete urologic investigation, as it often indicates conditions menacing the integrity of the organ involved, if not the life of the patient.

DIFFERENTIATION OF SOURCES OF HEMATURIA

	RENAL	VESICAL	URETHRAL
COLOR OF BLOOD:	Often smoky	Often not quite bright red	Bright red
MIXTURE WITH URINE:	Intimately mixed with urine	Some mixture with urine	Appears first
CLOTS:	Worm-like clots	Sometimes large clots	Rare
OCCURRENCE:	Continuous for a few days	More or less continuous	Intermittent
PAIN OR TENDERNESS:	In loins	In hypogastrium	In urethra
MICROSCOPICALLY:	Excess of renal epithelium or casts covered with RBC.	Excess of bladder squamous epithelium	
CAUSES:	1. Tumors 2. Calculus 3. Acute or chronic nephritis 4. Trauma 5. Tuberculosis 6. Syphilis 7. Hydronephrosis. 8. Pyonephrosis 9. Pyelitis 10. Movable kidney 11. Embolism and infarct of kidney 12. Thrombosis of renal veins 13. Aneurysm of renal artery 14. Pregnancy 15. Chronic passive congestion 16. Ureteritis (so-called idiopathic loop hole diagnosis)	1. Tumors: benign, malignant 2. Trauma 3. Cystitis: acute, subacute 4. Syphilis: chronic encrusted stone 5 Tuberculosis 6. Trigonitis 7. Diverticula 8. Parasitic diseases 9. Prostatic—hypertrophy, malignant, trauma, inflammation	1. Posterior urethritis 2. Verumontanitis 3. Injury

DISCUSSION

Dr. H. W. E. Walther (New Orleans): Some years ago I was privileged to read, before this Society, a paper on hematuria and the conclusions then drawn from my observations tally closely with those of Dr. Milam. It is quite proper for those who daily contact patients with hematuria to reiterate the possible dangers that might ensue where this symptom is treated lightly.

In my review, above mentioned, it was found that 51 per cent of the hematurias were due to new growths somewhere in the genito-urinary tract and, furthermore, that 72 per cent of these tumors were malignant. Rathbun reported from the Brooklyn Hospital in 1933 a series of hematurias in which over 50 per cent were due to urogenital neoplasms and of these over 60 per cent proved to be cancer. Figures such as these could be quoted ad infinitum, from observers both here and abroad; they all tell the same story and issue the same warnings. It would seem therefore incumbent to all practitioners of medicine to vigorously insist upon each patient with bloody urine seeing a specialist promptly in order that an accurate diagnosis be made; procrastination over a period of months or years may spell the difference between being able to save or lose a life.

Now it seems to me that the physician is becoming more cancer-conscious all the time, thanks to such timely presentations as the one we have just listened to. But the message is not getting over to the average man and woman on the street. Here is where our efforts must be directed. The school child gets plenty of attention, but the adult and those in middle life seldom receive talks on cancer prevention. Occasionally, before a woman's club, some one will warn against lumps in the breast remaining or neglecting uterine bleeding after menopause. But how seldom are they told the dangers of looking indifferently upon hematuria? We must see that the layman is made better acquainted with this dangerous symptom. Such effort would again demonstrate to the public that preventive medicine is a tangible asset.

Dr. W. A. Reed (New Orleans): We are all indebted to Dr. Milam for his excellent presentation of a subject about which considerable has been said and still more has been written. Nevertheless hematuria must be ever present in our mind each time a medical survey is made of any case that we are called upon to examine. Too much importance cannot possibly be given to the finding of macroscopic and even microscopic blood in the urine.

Every one of us here realizes that hematuria is a red flag of danger requiring immediate investigation, but we frequently fail to appreciate that a true hematuria may, and does exist in the face of a hazy or even crystalline clear urine, which when properly examined reveals from 10 to 30 red blood cells to the microscopic field.

Many a patient complaining of a slight urinary frequency with occasional burning on urination has lost his one and only opportunity of being cured of an early malignancy of the bladder or kidney, simply because he appeared to be in perfect health, had lost no weight, was suffering no real pain and voiding urine that was perfectly clear to the eye. Ten or fifteen years ago there was possibly a reasonable excuse for not doing or having done a complete urological study of such cases, due to the lack of modern equipment and properly trained men. Such certainly is not the case at the present time. Even in smaller towns is to be found a modern roentgen ray machine and at least one physician who is capable and equipped to do diagnostic instrumental urology. When it is not practical or possible to obtain retrograde pyelograms, intravenous urography will often reveal an unsuspected renal tumor, dilated kidney pelves or filling defects of the bladder long before the onset of pain or cachexia.

Each one of us who have confined our work to urology for any length of time can now boast of a rather long list of apparently complete cures of malignancy of the urinary tract. This, I am most positive, is due not entirely to our improved methods of treatment, nearly so much as it is to the fact that we now heed the danger signal of even microscopic hematuria, and promptly set about to determine the cause of it.

In conclusion permit me to say that a careful urine analysis, a rectal examination of the prostate, a simple roentgen ray picture, and possibly a cystoscopic examination will lower the morbidity and mortality of malignancy of the urinary tract more than anything else that can be done.

Dr. M. H. Foster (Alexandria): Some twelve years ago, when our Parish Medical Association met in Chicago, we had the pleasure of hearing Dr. Eisendrath of the Cook County Hospital give the source and etiology of hematuria. He took a dollar and split it up in so many cents, comparing it with so many per cent, giving a certain percentage of these cases as of genito-urinary origin. I was somewhat at sea to put my finger on the cause of hematurias which turned up in my practice.

Unless hematurias are produced by some other and obvious cause, I want to know if there is some urinary tuberculosis or neoplasm.

A few years ago a man came to me for an examination, with a story that he had had one attack of hematuria ten years previous. There were distinct tuberculous ulcers about the right ureter orifice with the ureterovesical fistula which transmitted the catheter back into the bladder after it had been passed into the ureter. He was cured and is still alive and apparently healthy.

The second cause, or neoplasms about the urinary system, is perhaps more numerous than we realize. On the twelfth of this month, a lady fifty-six years of age came to me with the story that she had been bleeding for three years. Examination showed four benign bladder papillomata, which were destroyed by electrocoagulation.

There is an additional cause of hematuria, which is usually slight. We do not want to overlook the work of Falsom, as given before the Section on Urology of the American Medical Association, in which he calls attention to paravaginal cystitis. If you overlook that you are going to overlook one of the causes of hematuria which causes considerable distress in the female, whenever it occurs.

Dr. DeWitt T. Milam (closing): Naturally, I thought, when selecting a subject that all the doctors come in contact with so often, that we would have a more or less open discussion. I want to thank Dr. Walther, Dr. Reed and Dr. Foster. I naturally expected some of the general practicioners or internal medicine men to have something to say.

I just want to emphasize again one thing I did not bring out. Hematuria covers volumes, and I had fifteen minutes, and I tried to take up only about seven or eight minutes of your time and make it short, and I would say sweet. One thing I did not emphasize very much is that very often we have hematurias where the patient has no pain, and that is another thought that I wanted to leave with you. I thought someone might bring it out, but they did not. I didn't discuss it, but barely mentioned it. I want to leave that thought with this meeting today, that when you have blood, in the great majority of cases, you have no pain at the beginning.

TULAREMIA: A STUDY OF 69 CASES*

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NEW ORLEANS

Synonyms: Plague-like Disease of Rodents, Deerfly Fever, Rabbit Fever, Francis' Disease. Tularemia is an infectious disease caused by the *Bacterium tularense*. It is primarily a disease of rodents (ground-squirrels, and rabbits.) It is transmitted from rodents to man: (a) by the bite of infected insects (ticks, flies, fleas, lice, and bed-bugs); (b) by contamination of the hands, conjunctivae, or other parts of the body with infected material from rodents, ticks, and flies; (c) by eating the flesh of infected animals that has not been sufficiently cooked. It has seemed doubtful to me whether the medical profession in Louisiana has been sufficiently interested in the disease and hence my reason for bringing the subject to your attention.

Kerlin[1], in 1928, read a paper before this society reporting the first case of tularemia recognized in Louisiana. This is the only paper on the subject that has been presented to the society up to the present time. We note in the New Orleans Medical and Surgical Journal that Lloyd,[2] Goldsmith,[3] and Kahn[4] reported cases occurring in Louisiana; Collins,[5] a paper on "The Transmission of Tularemia by the Domestic Cat," and Lewis,[6] "Some Observations in Simple Blood Smear Agglutination Tests in Tularemia, Typhus and Undulant Fever." Thus in the past seven years only three articles and three reports of cases have appeared in the New Orleans Medical and Surgical Journal, the official journal of our society.

The material for this paper is taken from 8 cases that we had at the J. T. Nix Clinic and 61 cases from the Charity Hospital at New Orleans. Although there were 78 cases clinically diagnosed as tularemia at the hospital, I have included only the cases which had a positive agglutination test.

HISTORY

The history of tularemia is as interesting as a romance. As you know, it is the only disease that, from beginning to end, has been worked out by American scientists, and the major part of this work was done by members of the U. S. Public Health Service. It seems probable that Moses, that wise sanitarian of antiquity, who lived in the thirteenth century before Christ, might have had tularemia in mind when he wrote in Leviticus XI:6-8 "The hare also ---------- The first of these you shall not eat, nor shall you touch their carcases, because they are unclean to you." In 1904 a California boy[7] of fifteen years gave the first written description of the disease. Twenty-four years later his blood was examined by Francis and found to agglutinate *Bacterium tularense*.[7] In 1907 Martin, an ophthalmolo-

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gist of Arizona, described five cases in his practice.

In 1911 Pearse saw six cases in Utah and called them "deer-fly fever". In the same year McCoy (U. S. P. H. S.) studied cases in the California ground-squirrels, which he called "plague-like disease of rodents". In 1912 McCoy and Chapin (U. S. P. H. S.) discovered the *Bacterium tularense*, so named after Tulare County, California, where the infected ground-squirrels had been found.

In 1914 Vail, Wherry and Lamb of Cincinnati isolated the organism from a human case. In 1919-1920 Francis (U. S. P. H.) recognized the identity of "deer-fly fever" and "plague-like disease of rodents" and named the disease tularemia because he found *Bacterium tularense* in the blood.

TRANSMISSION OF THE DISEASE

Transmission is only from infected material of rodents or insects to man. There is no record of the transmission of the disease from man to man by direct contact or by the bite of an insect which has previously bitten an infected human being. No other disease has claimed such a high percentage of laboratory personnel. Thus to 1926 there were on record twenty cases of laboratory infection, fifteen of these being members of the U. S. Public Health Service.

Madame Ohara in 1925 allowed herself to be innoculated with the infected material from a rabbit and she is the only example of the experimental transmission of tularemia to a human volunteer.

In Louisiana the disease is usually acquired from handling infected wild rabbits. Thus in our 69 cases, 48 gave a history of contact with rabbits, 1 with a squirrel and opossum, 2 with squirrels, 1 with possibly a tick. This is interesting in as much as when Kerlin reported his 4 cases, 3 had had contacts with ticks and there was possibility of tick contact in the other case. Tick bite as a source of infection must not be lost sight of, for in 1928 Kerlin quoted a communication from Francis, who stated that 24 cases were on record for the Southern States as follows: Louisiana 8, Arkansas 6, Tennessee 6, Texas 2, Oklahoma 2. The acquisition of tularemia from the ingestion of insufficiently cooked infected rodents used as food is well illustrated by Crawford.[8] He reports from Orangeburg, South Carolina, 6 cases with 2 fatalities in the infant cases, from the ingestion of insufficiently cooked rabbit meat.

SEASONAL OCCURRENCE

In Louisiana the open hunting season for hares and rabbits extends from November 1 to February 15. The seasonal occurrence of our cases was as follows: January 11, February 13, March 9, April 4, May 4, June 3, July 2, August 0, September 4, October 1, November 3, December 15. The months of January, February, March and December furnished 48 cases or 69 per cent of the cases. This corresponds closely with the rabbit hunting season.

NUMBER OF CASES

To May 15, 1929, *i. e.* ten years after Francis had placed tularemia in a definite class, 806 cases had been reported in the United States according to the U. S. Public Health Service. The Annual Report of the United States Public Health Service for 1932 gives 945 cases with 31 deaths, a mortality of 3.2 per cent. These figures show in a striking way that the disease is being recognized. In the past no doubt cases went unrecognized or were incorrectly diagnosed as typhoid fever, influenza, glandular fever, lymph-adenitis or what not.

The following records will give some idea of the prevalence of the disease in Louisiana.

Year	La. State Board Of Health	Charity Hospital At New Orleans	J. T. Nix Clinic
1927	8		
1928	14	4	
1929	19	3	
1930	17	10	2
1931	26	8	0
1932	38	8	0
1933	37	14	2
1934	33	14	3
1935			1
	192	61	8

The records of the Board of Health and the Charity Hospital for 1935 were not looked up and one of the Clinic cases occurred in January 1935.

DISTRIBUTION

To date human cases have been reported from 43 states of the United States and from Japan, Russia, England, Norway and Sweden. No doubt as physicians are more on the qui vive it will be found that the disease has probably a world-wide distribution.

SEX

Of the 69 cases, 41 were male, 28 females. Of the 61 Charity Hospital cases 39 were males (24 white, 15 negro), 22 females (17 white, 5 colored). Of the 8 Clinic cases, 6 females, 2 males (all white).

Table of Age Incidence.

Age YEARS	NUMBER OF CASES
14-20	12
21-30	16
31-40	17
41-50	13
51-60	9
61-70	1
71-80	1
	69

81 per cent of the cases occurred between the ages of 14 and 50 years. The youngest case was 14 years and the oldest case was 80 years.

PATHOLOGY

The picture is that of a subacute infective granuloma closely resembling tuberculosis. The lesions are chiefly found in the skin, the regional lymph glands, spleen, liver and lungs. The characteristic findings are caseous necrosis and hyperplasia of the reticulo-endothelial cells. Not many cases have come to autopsy. Foulger, Glozer and Foshay,[9] in reviewing the literature in 1932, could find only 8 cases and they reported an additional one in which for the first time lesions were found in the peritoneum and *Bacterium tularense* was demonstrated for the first time in sections of human tissues.

CLINICAL TYPES

Francis,[10, 11] describes four clinical types: (1) The ulceroglandular type, in which there is an ulcer of the skin and a regional lymph adenopathy. This forms the great majority of the cases. Of our 69 cases, 56 belonged to this type, and 7 of the 8 clinic cases. (2) The oculoglandular type, in which there is a primary conjunctivitis followed by a regional adenopathy. There were 2 such cases in our series. (3) The glandular type, which shows only glandular enlargement without any visible primary lesion. Eight such cases were found. Finally (4) the typhoid type, which shows neither a primary lesion nor a glandular enlargement, but which has fever as the prominent symptom. Three cases occurred in our series.

INITIAL LESION

The initial lesion is a small, superficial, painful, indolent ulcer. It is easy to overlook, unless we are very careful in our physical examination or unless the patient directs our attention to it. In the 69 cases, the lesion was on the hand in 55, on the eye in 2, on the elbow in 1, and no lesion in 11.

ADENOPATHY

The axillary and epitrochlear glands together were involved in 37 per cent of cases, the axillary alone in 30 per cent and the epitrochlear alone in 2.8 per cent.

CLINICAL COURSE

The incubation period varied in our cases between 1 and 10 days. The onset is sudden with fever, headache, general body pains and chilliness. Vomiting may occur. These symptoms are similar to those of influenza and many cases at the onset are so diagnosed. Skin eruptions may occur which may be macular, papular, maculo-papular or papulo-pustular. The course of the disease is marked by fever, weakness, loss of weight, recurring chills, sweats and prostration. The fever reached 105.8° F. in one case. Some cases are afebrile. The average duration of the fever in 39 cases was 37 days. In one case it lasted 150 days. Convalescence is slow. Patients may not feel normal before six months or a year. One of our cases did not feel entirely well until the end of three years.

DIAGNOSIS

The diagnosis in the ulceroglandular, oculoglandular and glandular types is made from the physical examination, the history of the case and the agglutination reaction. The agglutination test is so consistently positive that I doubt if it is permissible to make a positive diagnosis when the reaction remains negative. No agglutinins are present during the first week but

are present during the second week. The agglutination test has been found positive twenty-four years after the onset of the disease. In the typhoid type the diagnosis can be made only by keeping in mind the possibility of tularemia as a cause of obscure fever and then confirming our suspicion by the agglutination test. Lee Foshay[12] has investigated the possibility of early diagnosis by an intradermal test. Suspensions of heat-killed organisms give a strong reaction and are not safe, so that formaldehyde-killed bacteria are treated with either hydrogen peroxide or nascent nitrous acid to detoxify the bacteria. By this procedure positive reactions have been obtained in early cases with negative agglutination reactions, which subsequently became positive. The test has been applied on the second day of the illness and became positive in 48 hours.

LABORATORY EXAMINATIONS

The agglutination test was positive in all cases.

The Wassermann test was made in 60 cases and was negative in 56, positive in 4.

The total white count was made in 51 cases. The average 9,558 per cu. mm., lowest 3,500, highest 26,050.

The total red count was made in 31 cases. The average was 4,640,000 lowest 3,115,000, highest 6,160,000.

Hemoglobin was tested in 33 cases. The average was 65 per cent, lowest 30 per cent, highest 59 per cent.

The differential count was made in 49 cases:

Small lymphocytes	average 25, variation 6 to 64;
Large lymphocytes	average 6, variation 0 to 8;
Neutrophils	average 66, variation 34 to 89;
Eosinophils	average 0.8, variation 0 to 10;
Basophils	average 0.2, variation 0.2 to 3.

Urinalysis was made in the 69 cases. Traces of albumin were found in 6, hyaline casts in 9, granular casts in 4.

MORTALITY

The mortality of the disease is slightly less than 4 per cent. There was one death in the 61 Charity Hospital cases and none in the 8 Clinic cases. The mortality of this series, 1.4 per cent, is unusually low.

IMMUNITY AND PROPHYLAXIS

Immunity is lasting after one attack. Rubber gloves should be worn by those handling wild rabbits and other rodents which may be contaminated. The meat of rodents which is used as food should be thoroughly cooked as it is then harmless as food. E. F. Smith[13] quotes from the U. S. Public Health Service on the handling of rabbits as follows: "Beware of wild rabbits, one per cent of them is infected with tularemia. Rabbit meat thoroughly cooked is harmless as food, because a temperature of 133° F. (55°C.) kills the infecting organism. Rubber gloves should be worn by those who have to dress wild rabbits. Beware of the wild rabbit which a dog or cat has caught, or which a boy has killed—it is probably a sick rabbit. The hunter should not shoot his rabbits at the point of a gun; let him shoot him on the run at 75 yards, say."

TREATMENT

This is symptomatic. Rest in bed is very important. A mild antiseptic lotion may be applied to the ulcer but it should not be incised as to do so would only aggravate the lesion. The regional lymph glands should not be incised unless they are very soft and the overlying skin very thin, showing that suppuration is inevitable.

A great variety of treatments has been suggested such as mercurochrome, salvarsan intravenously; the use of phenol as conterirritant locally in glandular cases; acid mercuric nitrate and arsenical paste to the initial lesion, and ultraviolet rays. Lee Foshay[14] used a specific anti-serum prepared from a goat. This was tried on 10 patients and results were said to have been very good in all these cases except one whose treatment was begun in a moribund condition. W. S. Fisher[15] reports a favorable report of the use of neo-arsphenamine in 4 cases. W. M. Simpson,[16] in reporting 103 cases, claims that Foshay's goat antitularense serum is a promising specific therapeutic agent against the disease. When 10 c. c. of this serum were injected intravenously on two successive days the clinical symptoms disappeared forty-eight hours after the second injection.

R. Alexander Bate[17] is the first one to treat a case by transfusion from a blood donor who had had tularemia. The improvement was gradual. H. L. Baer[18] applied a dose of a half unit of unfiltered roentgen rays to the pri-

mary lesions of tularemia. The pain in the finger in the first case was relieved in 3 hours and in the second case in 6 hours. This is very interesting as the patients at times complain bitterly of the initial lesion which continues painful in spite of local measures applied for relief. Both patients made an uneventful recovery. Previous to reading this form of treatment, I had requested one of my cases to allow me to apply radium to the initial lesion in an attempt to relieve the pain but he had refused this treatment which as far as I know has never been tried.

A brief description of the eight Clinic cases follows.

Case I. Mrs. L. G., white, aged 53 years, was seen on December 22, 1930. The day following the skinning of a rabbit she developed fever of 103°F. Fever continued for ten weeks. She had a painful indolent ulcer on the exterior surface of the right hand. The ulcer healed in two months. The right epitrochlear gland reached the size of a pigeon egg and the axillary gland was the size of a hen egg. The course of the disease was characterized by severe general pains and profuse sweats. On account of the pains, acute respiratory symptoms that she had at the onset and the fever, I first made a diagnosis of influenza. In her own words she felt like a "mad dog". On January 7, 1931 tularemia agglutination was positive in dilutions up to 1 to 100. Cystitis was a complication in this case. In March, 1934 she said that her thumb and arm were still occasionally sore. Convalescence lasted nearly three years.

Case 2. Mrs. J. W., white, aged 28 years, was admitted to Hotel Dieu on December 17, 1929 complaining of an infection of her left index finger, which she had stuck while sewing three weeks previously. Her fever had ranged between 103° and 105°F. The finger was swollen, slightly painful and the skin was white in some areas and purple in others. A lymphangitis on the anterior surface of the arm and a slight axillary adenitis were present. Three days before and also on the day of her admission to the hospital the finger had been incised. A slight amount of pus was obtained on the second incision, none on the first. The course of the disease was characterized by profuse sweats and a fever that lasted four weeks.

As the Wassermann reaction was positive we thought that we were dealing with an infection resting on a syphilitic background. Three weeks after leaving the hospital the patient came to the Clinic complaining of pelvic pains. At this time the finger was still draining and the axillary glands were sensitive, matted together and the size of a hen egg. The diagnosis of tularemia seemed obvious at this time. Her agglutination was positive up to 1 to 300. This was the only case seen at the Clinic with a negative rabbit exposure history.

Case 3. Mrs. G. H., white, aged 49 years, was seen on December 12, 1933. Ten days after cleaning some rabbits which had been killed in Jefferson Parish Louisiana, she developed an ulcer on the extensor surface of the middle finger of the right hand. The diagnosis of tularemia was made as soon as I saw her but had been overlooked by the nose and throat specialist, whom she had consulted for headache. The right epitrochlear gland was the size of a pigeon egg and the axillary glands the size of a hen egg. There was also a marked cervical adenopathy. The clinical course was characterized by severe headaches, general pains, emaciation and fever that lasted one and a half weeks. Tularemia agglutination was positive in dilutions up to 1 to 480. The axillary glands reached the size of a closed fist and fluctuated. The overlying skin became red and very thin. This was the only case in which it became necessary to incise the glands. A thick, white, cheesy material, resembling tuberculous pus, was obtained. The patient was relieved and the wound healed in about two weeks.

Case 4. Mrs. L. A., white, aged 56 years, was seen on December 12, 1933. Two days after cleaning a rabbit she developed fever, two weeks later a sore thumb, and a week later soreness of the axillary glands. The rabbit had been killed at Little Woods in Orleans Parish, Louisiana. The patient had acute respiratory symptoms, general pains and an irregular fever. She also complained of cystitis and the urine showed pus and a trace of albumin. For two weeks the temperature ranged between 102° and 103° F. and the physical examination did not seem to reveal the real cause of her trouble. At the end of this time the nurse called my attention to an almost imperceptible ulcer on the left thumb, which was slightly painful, and to a painful swelling in the left axilla. The diagnosis was now obvious. The agglutination for tularemia was found positive in dilutions up to 1 to 320. This patient ran a stormy course as the disease was complicated by cystitis, cholecystitis and acute respiratory infection; moreover, she had a relapse, just as one sees in typhoid fever. Her fever lasted fourteen weeks.

Case 5. Mrs. J. H., white, aged 55 years, was seen on January 9, 1934. Two days after cleaning a rabbit she developed fever and an infection of the left index finger. Her clinical course was characterized by dyspnea, dizziness, pains in the right upper abdomnal quadrant, signs of cardiac decompensation and fever which reached 103.2° F. and lasted three weeks. This was our only case that failed to show a regional adenopathy. The

agglutination was positive in dilutions up to 1 to 480. Incision of the finger liberated a very foul, sero-sanguinous fluid, and somewhat relieved the patient. Three months and a half after the onset of the disease, the finger, wrist, elbow and shoulder were still painful at times. This patient, who weighed 280 pounds, lost 25 pounds in three and a half months.

Case 6. Mr. A. L., white, aged 43 years, a dealer in vegetables and game, consulted us on December 19, 1934. A month previous he had stuck a splinter in his hand and the next day he had skinned some rabbits. The following day he had fever and two weeks later he had noticed a swelling near the elbow. This was the size of a pigeon egg. Examination showed that the axillary glands were the size of a hen egg, but the patient did not seem to have noticed them. In the palm of the right hand were two small, painless superficial ulcers. The hand had been painful for only a week. The glands were still sensitive. The physician who had seem him previously to us had made the correct diagnosis.

The clinical course was characterized by chilly sensations and fever up to 102° F. which lasted two weeks. His agglutination was positive in dilutions up to 1 to 160.

The patient refused to take to bed and kept on working.

Case 7. Mr. F. P., white, aged 44 years, a vegetable, fish and game dealer, was seen on December 10, 1934. Three days previous to his illness he had skinned some rabbits and a few days before this he had stuck his right thumb with some fish or shrimp. His clinical course was characterized by sore throat, general aches, irritability, a great deal of soreness and pain of the initial lesion and fever which reached 103.4° F. and lasted two weeks. He was an intractable patient and remained in bed only four days at the onset of his disease, the rest of the time he kept working. His agglutination was positive in dilutions up to 1 to 80.

Case 8. Mrs. E. F., white, aged 80 years, while under our treatment for acute cardiac decompensation in December, 1934, casually mentioned a soreness of her left thumb. The history revealed that three days after she had stuck her finger while cleaning a rabbit, the finger had become sensitive. A very small, slightly painful, indolent ulcer developed as well as a slight axillary adenopathy. The clinical course was afebrile. This was the mildest of our cases. The agglutination was positive in dilutions up to 1 to 320.

TABLE OF CLINICAL FINDINGS

Case	Year	Month	Sex	Age	History of Rabbit Contact	Rabbit Where From	Incubation days	Site of Initial Lesion	Duration of Fever Weeks	Adenopathy Epitrochlear	Adenopathy Axillary
1	1930	Dec.	F	53	+	Market	1	Right thumb	10	+	+
2	1930	Dec.	F	28	0	0	3	Left index	4	0	+
3	1933	Dec.	F	49	+	Jefferson Parish, La.	10	Right middle finger	6	+	+
4	1933	Dec.	F	56	+	Orleans Parish, La.	2	Left thumb	14	0	+
5	1934	Jan.	F	55	+	Market	2	Left index	3	0	0
6	1934	Dec.	M	40	+	Market	3	Right thumb	2	0	+
7	1934	Dec.	M	43	+	Market	1	Palm rt. hand	2	+	+
8	1935	Jan.	F	80	+	Market	3	Left thumb	0	0	+

TABLE OF LABORATORY FINDINGS

BLOOD

Case	Agglutination	Total Leukocytes	Lymphocytes Small	Lymphocytes Large	Neutrophils	Eosinophils
1	1:100	....	....	....	....	....
2	1:300	9300	18	1	81	0
3	1:480	11750	40	2	58	
4	1:320	....	....	....	....	....
5	1:480	8250	22	8	70	0
6	1:80	9750	23	4	72	0
7	1:160	8250	27	2	69	2
8	1:320	9500	22	0	78	0

URINALYSIS

Case	Albumin	Casts	Pus
1	....	....	....
2	Trace	0	0
3	Trace	0	++
4	Trace	Hyaline	++
5	Trace	Hyaline, granular	+
6	0	0	0
7	0	0	0
8	0	0	0

SUMMARY

1. A brief review of our present knowledge of tularemia has been presented.

2. The pertinent findings in 69 cases, 61 from the records of Charity Hospital and 8 from the J. T. Nix Clinic, have been noted.

3. Nearly 70 per cent of the cases gave a history of having handled wild rabbits.

4. A sufficient number of cases occur, especially during the rabbit hunting season, to warrant our keeping the disease in mind.

5. Because of the fact that two of our cases insisted on working while having the disease and that one of our cases was afebrile and so mild that it required no medical treatment, I am led to suspect that many cases may occur without seeking medical consultation and get cured without any treatment.

6. The mortality of this series was exceptionally low, only one of the 69 cases having died, 1.4 per cent in contrast with the usual mortality of 3.5 per cent.

7. Attention has been called to specific serum therapy and roentgen ray therapy. Both these treatments seem promising.

In conclusion, I wish to thank Dr. Arthur Vidrine, Superintendent of the Charity Hospital, who allowed me to study the hospital records and also the Louisiana State Board of Health, that furnished me the yearly number of cases that had been reported to it.

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DISCUSSION

Dr. A. E. Fossier (New Orleans): Dr. Perret has really given us quite a treatise on infectious tularemia and to my mind it is as able a paper as I ever read on the subject and he deserves a great deal of credit for the large amount of work and research he has gone through in order to bring the matter to our attention.

I agree with Dr. Perret that there is much more tularemia in the state than is recognized. The symptoms are so closely associated with those of other conditions that a mistaken diagnosis is justified, especially where there are not the facilities of a laboratory where the agglutination test can be made.

We know that tularemia, as Dr. Perret told you, is named after a county in California, which is a lake county where there is a lot of bullrush. The county has been named after the bullrush and called "Toley" or "Tulare". Now, the interesting part about this is that California has the very same bullrush we have here in the southern part of the state. California and Louisiana are recognized as the two states that have that particular bullrush, so although tularemia was first discovered in California, we have the same topographical relationship.

The large number of cases brought out is interesting. Sixty-nine cases that are positive cases without any doubt, as the diagnosis was made on the agglutination test. This study of sixty-nine cases is especially interesting for the reason we had here in New Orleans the lowest death rate found anywhere else. Dr. Perret tells us the death rate was 1.4 per cent against nearly 4 per cent for the rest of the country. What the cause of this is, I do not know, whether they have been better treated by Charity Hospital and Dr. Perret than elsewhere, or whether the disease is milder here, I am not able to say at this time.

The only thing, I am sorry that Dr. Perret, and this is only a matter of suggestion, has not taken the 192 cases reported by the State Board of Health and made a study as to the geography, relative to where the disease was found, whether in marshy regions, what region predominated, though this

would take a lot of work, it might add to the knowledge of the disease.

The diagnosis is difficult. We have only one thing that makes the diagnosis positive and that is the agglutination test. We cannot rely on anything else in known laboratory methods, blood test, urinalysis, or anything else.

Now about types; just a short while ago an article appeared in which the pneumonic type of tularemia is mentioned, and two cases were reported with positive agglutination. As a rule these cases are fatal. One died in thirty-two days and the other very shortly after. The pneumonic type must be taken into consideration. If a man shows any symptoms of lung condition it is probable the tularemia is of the pneumonic type.

We have no specific treatment. It is claimed the best results have been with antiserum and all attempts with vaccination have been abandoned.

As to the question of prophylaxis, I think the disease can be prevented if the proper precaution is taken when hunting wild rabbits, also handling rodents. I do not know whether muskrats have been proved to bring about tularemia. In this part of the country where so much trapping goes on, there may be some tularemia caused by muskrats. I think the only way we could bring people who come in contact with wild rabbits to be careful would be if on their hunting licenses the admonition of the U. S. Government were printed, in regard to using gloves and being careful when cleaning rabbits. I do not know what we are going to do about this matter, but I think we can pass a resolution to have it sent over to the House of Delegates as a recommendation that the State License Bureau put this admonition of the U. S. Government on hunting licenses.

It has been a pleasure to listen to the paper of Dr. Perret. I think a lot of tularemia is overlooked here in New Orleans no doubt as well as in the Parishes.

Dr. Dan Kelly: I want to thank the committee for inviting this doctor to read the paper on rabbit fever. My attention was called to it three or four years ago by Dr. Williams of Monroe and since then I have had six or eight cases in one summer. It is my opinion that rabbit fever among the poorer classes to-day is one of the most important diseases we have; we are just overlooking it.

I had one case come to me with bubo. I examined it to see if it was due to something else. I asked if he had an ulcer anywhere, and he answered on his hip. I examined that and found he had been bitten and infected by a tick.

My cases are evidently a little more severe than most of the cases I have heard the doctors talk about. In all my cases, the glands abscessed, and the patients were very, very sick. One of the last cases I had was a lady who was passing along the road after a rain and pricked her finger with a thorn, went home and helped her brother dress some rabbits, and came down with tularemia. About two years ago, I had six or eight cases, but I just see it occasionally now. I think it is a very important disease and the most important disease we see among the poor. This disease is very prevalent in this state and especially amongst the poorer whites and negroes on the farms.

Dr. S. Chaille Jamison (New Orleans): I regret I did not hear the paper, but I have had one or two experiences with tularemia that have helped me so much that I would like to hand them on to you even at the risk of being prolix.

In the first place, what Dr. Kelly said has happened to me in the past. I remember very clearly some ten or twelve years ago one of the students took me to a bedside in a negro ward and asked, "Doctor, what do you think about that epitrochlear gland, isn't it very large?" Well, it was very large. In fact, I have never seen a gland quite as large. I told this individual that I did not know exactly what it was, some type of adenopathy. We incised that gland, drained a little muco-purulent material and the negro left the hospital.

My experience in my ward where we have tularemia very commonly is that it is not an extremely serious condition. The majority of them get along quite well on symptomatic treatment. So far as I know, specific treatments are not satisfactory.

Now, I want to relate another experience. I had an individual admitted to my service with enlarged cervical glands, large axillary glands, especially marked cervical glands, and these were matty and adherent. I thought the patient had tuberculous adenitis, however, blood agglutinations gave positive agglutinations for tularemia. I went before a class and demonstrated the patient as an example of cervical adenitis due to tularemia —a little against my convictions, I say it myself, admitting the possibility of tuberculous adenitis, in spite of the agglutinations in fairly strong dilutions. As time passed it became obvious that this individual not only had tuberculous adenitis, but tuberculosis of the lungs, and he succumbed to tuberculosis.

The point I want to make here is that the agglutination test means very little. I have that experience commonly. It means apparently a lifetime immunity. In the majority of instances the person has immunity for a life time, therefore, it does not mean the patient is infected by clinical tularemia.

Dr. Saul F. Landry (Houma): I have enjoyed the paper very much because I am from a section of the country where tularemia is prevalent.

Answering Dr. Fossier's question, I believe the muskrat carries the infection. I have had many

cases from trappers who gave no history of dealing with any animals but the muskrat.

The disease is usually mild. I noticed one particular thing about it which I thought characteristic, that is that the glandular suppuration which comes after the disease has more or less subsided, the pus from the tularemia gland, I thought peculiar to the disease. It is usually sulphur yellow and has a characteristic odor. I incise a great many and suspect the disease when I get a soft and enlarged gland with thick yellow pus which has a rather characteristic odor.

Dr. Arthur A. Herold (Shreveport): I am sure all of us have seen a great many cases of unsuspected tularemia, looking back on patients in the past and recognizing the condition. The first case which I saw that I am now positive was tularemia was undiagnosed. The gentleman lived ten miles from my home, had a lesion on his finger and remarkably large epitrochlear gland, temperature 101° to 103°, with a history of having skinned rabbits. At that time I had not heard of tularemia and immediately decided he had a streptococcic infection. I gave him two injections of antistreptococcic serum intravenously on the first and third days and he showed improvement almost immediately, and after two or three weeks claimed he was all right. I do not say he was cured by the serum, but whether it gave the necessary antibodies or whether he had a complicating streptococcic infection with the tularemia are questions of probability.

I have recently seen a case of the typhoid type which is making a gradual recovery. That shows it is well distributed throughout the State. This lady did not handle any wild animals and picked it up probably with domestic animals.

Dr. J. M. Perret (In conclusion). I want to thank the gentlemen who discussed my paper. Doctor Fossier asked me whether muskrats could spread the disease. In the sixty-nine cases studied, none were due to the muskrat, but I am glad Doctor Landry answered your question, saying he had seen such cases in his part of the country. The rabbits that we get over here and buy at the market come from Missouri.

The Public Health Service says that 1 per cent of the rabbits are infected, so when we see thousands of rabbits on the open market we can figure 1 per cent have tularemia.

As to geography, I know rabbits have been found infected near Kenner and at Little Woods, Louisiana.

The doctor brought out the question of lung conditions. In a late issue of the A. M. A. Journal, March 1935, Archer, Blackford and Wissler of the University of Virginia, showed that as demonstrated by roentgen examination definite pulmonary changes are present in a high percentage of tularemia cases, and that peribronchial thickening is frequent in patients recovering from the disease. If we use the roentgen ray routinely on cases we have in the hospital, we shall be surprised at the number of cases with pulmonary lesions.

Doctor Kelly said the subject of tularemia was important among the poor people because lots of poor people go hunting and get rabbits, and the poorer they are the greater is the necessity for them to get rabbits to use as food.

As to Doctor Jamison's remarks about the positive agglutination reaction, we have to use discretion in the evaluation of the positive agglutination test. A case has been reported where the agglutination test was positive after twenty-four years. A patient may have had tularemia years previously and there is no reason why he should not have tuberculosis, syphilis, or some other disease at a later date. In such cases we must use our knowledge of differential diagnosis.

As far as the mortality of the cases is concerned, it is not high, but the morbidity is high. The patient with tularemia is very sick, and for months may be unable to work. The morbidity, therefore, is pretty high and the patients suffer much pain. All the glands become very much enlarged, many to the size of a hen's egg or larger.

As to treatment, I have mentioned already that it is symptomatic and that the serum so far is in the experimental stage and not yet on the market.

THE INCREASING CALL FOR THE MODERN TREATMENT OF FRACTURES OF THE SPINE*

EDWARD S. HATCH, M. D.
NEW ORLEANS

The diagnosis of fractures of the spine is being made much more frequently each year, and cases which were called "sprained" or "wrenched backs" in the past, often from comparatively trivial injuries, are now recognized as fractures of one or more vertebral bodies.

I shall speak today only of spinal fractures without cord symptoms, which, in my experience, represent about 70 per cent of these fractures. The increased interest in spinal fractures is due, I feel sure, to the fact that this diagnosis is made much more frequently of late due to the making of very careful physical examinations, and to increasingly better roentgenograms.

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*Read before the Louisiana State Medical Society, New Orleans, April 29-May 1, 1935.

One need only to read the daily papers to see how much more frequent automobile accidents are than they were, say, 10 years ago, and a certain per cent of these accidents must, of necessity, mean spinal fractures.

For the last 10 or 15 years, I have taught the importance of lateral spinal roentgenograms in all cases of back injury. One should never be satisfied with an anterior posterior view alone, as it is much more difficult to diagnose slight cracks and compression fractures of the vertebral bodies in the antero-posterior than in the lateral view. It is wise to take roentgenograms of the entire spine; as it not infrequently happens that fractures are found at different levels than the one at first suspected.

The weakest part of the spinal column is the space occupied by the last two dorsal and the first two lumbar vertebrae. Here the normal kyphotic curve of the dorsal region is reversed into the normal lordotic curve of the lumbar region. That explains why we most frequently find spinal fractures in this region. The cervical region comes next, and here we find fractures and fracture dislocations quite frequently.

J. T. Watkins says: "The key to diagnosis is suspicion." When a patient has been forcibly doubled up, or he has fallen some distance, landing on his feet or his buttocks, he has a broken back until you prove he has not. Spinal fractures are often caused from trivial injuries, such as sitting in an automobile, or other moving vehicles, when the knees are flexed and body extended, the body is then bent forward suddenly, as in hitting a bump or being suddenly thrown up then dropped back onto the seat.

Let me speak for a moment of Kummell's disease. This doctor's first article appeared in 1891, and he described his cases with spinal symptoms as the result of unrecognized and further untreated fractures. It is fair to say that this was before the days of roentgen ray, and many years before the importance of lateral roentgenograms was recognized, so that many of his cases were, undoubtedly, unrecognized fractures. It is doubtful if Kummell's disease is an entity.

Even after the diagnosis of fracture of the spine is made, I am sure that some surgeons feel that rest in bed, or on a frame, is all the treatment that is necessary. As an illustration of this fact, I heard one of our best Louisiana general surgeons make the statement two or three years ago that he treated his spinal fractures in that way, because he believed nothing more could be done for them. This is, to say the least, a sad commentary on the modern treatment of this not uncommon injury.

When a fracture of the spine is suspected, first-aid and the transportation of the patient to a hospital must be thought of. The avoidance of all trauma or any manipulation that might increase compression is best handled by keeping the patient in the prone position; he never should be allowed to stand or even to sit up. Examination at the hospital will usually disclose some tenderness at the fracture site, and pain on spinal motions. Roentgenograms, antero-posterior and lateral views, of the whole spine are then made. We often find more than one fracture; therefore, as stated above, it is the part of wisdom to take roentgenograms of the whole spine at first, and be sure that your pictures are good enough to show the detail of bone structure, so that if you do not find a fracture by roentgen ray examinations, you can safely rule out that diagnosis. However, Feaster reports that in three cases he found no evidence of fracture of the vertebral bodies immediately following the accident, but in roentgenograms made ten days to three weeks later he found definite compression.

Stallard also speaks of this possibility, but says: "Fortunately, these latent fractures are rare." He found one case in a study of 301 definite spinal fractures.

This illustrates just how careful we should be in getting perfect roentgenograms, because while it is entirely possible that the vertebral body being composed of cancellous bone may be injured, and later distorted, by weight-bearing, it is also possible that in a roentgen ray examination that does not show perfect bone detail a crack may be easily overlooked.

Many papers have been written on spinal fractures, and a large number of cases re-

ported. It now seems to be very well proved that rapid hyperextension is the method of choice in the treatment of these fractures. Davis, in 1929, wrote a very interesting and comprehensive paper on this method. In his paper he showed that the great strength of the anterior common ligament plus the firm attachment of the intervertebral discs, and the strength and resistance of the lateral body masses make hyperextension the ideal treatment. As more and more of these cases are being reported, the literature of cures is steadily increasing.

Rogers, of Boston, a year later described a flexible frame in which he secured gradual reduction of the deformity with very good results. Now he hyperextends his patients rapidly while they are under the influence of morphine and scopolamine. He does this in 15 or 20 minutes.

Dunlop and Parker reported at the meeting of the American Orthopedic Association, in 1933, a somewhat more radical procedure, in which they anesthetize the patient, and while extension is being made on the arms and legs, hyperextension of the spine is done suddenly by means of a sling around the patient who is then let down onto the arched bars of a Goldthwait frame, position checked by roentgen ray, then a body cast is applied. The after treatment is conventional. They report some perfect results, and while I believe their method is perhaps the best, I have not used this technic up to the present time. There have been many other methods of rapid hyperextension introduced, even to careful hammering at the fracture site while the upper part of the patient's body is fixed to a table in the prone position, his legs elevated, which position hyperextends the spine in the reverse manner. A large number of surgeons still prefer the gradual technic first introduced by Rogers which gives excellent results.

We have been using, for some time, a modification of the Rogers' method, most of the time with an anesthetic, occasionally without. The frame we use is one introduced by Walter E. Johnson, which is a light-weight modification of the Goldthwait frame, and can be carried about if necessary.

Different lengths of light thin steel bars are used which are flexed by a thumb-screw. The procedure is as follows: A felt pad is placed over the bars which are in slight hyperextension. The patient is placed on the bars, after being anesthetized, and while assistants hold the patient's legs and arms in extension, his spine is rapidly hyperextended with a thumb-screw, the apex of the hyperextension being at the site of fracture.

If possible, and we are usually able to do this, a lateral roentgen ray is made to check up on our correction. When we are satisfied with the position, a plaster cast is applied including the steels, as is done on the Goldthwait frame in cases of spinal tuberculosis.

When the plaster has set, the steel bars are removed, and the patient is placed in bed. They are usually very comfortable; however, care must be taken to avoid gas distention by diet or enemas. If everything goes well, this cast remains on 10 or 12 weeks, the patient being recumbent during that period. During most of this time, exercise for the legs and upper trunk are used, after the method of Boehler, so that when the plaster jacket is taken off the patient is in good general physical condition. A Taylor back brace is then designed and fitted which is usually worn for from six to nine months. Many of these patients begin light work in one or two months after the brace is applied.

How different is the outlook now for our patients than that of a comparatively few years ago, when a broken back meant prolonged hospitalization, permanent deformity, and practically always some permanent partial disability.

In fractures of the cervical region which, in my experience, are the next most frequent, the treatment is quite different.

Here more conservatism is necessary. These cases are often caused by diving into shallow water or in football injuries. Many of these fractures are accompanied by spinal cord injury. These latter we will not have time to go into in this paper. If these fractures, without cord symptoms, are accompanied by dislocation, reduce the dislocation under an anesthetic, and then treat the fracture. These fractures are best treated by head extension. Have a well-

fitting halter made, adjusting it to the patient's head while he is lying on his back in bed, the head of the bed being raised 18 inches; a weight and pulley is used attached to the halter to get extension. After a few days in bed, pain and muscle spasm are usually relieved. I like to keep these patients in extension for three to four weeks, and then very carefully apply a plaster jacket, including the head, so that the fractured vertebrae are held perfectly while the patient is up and about. Healing is usually complete in eight to ten weeks.

As we are now treating fractures of the spine with the fundamental principles underlying the setting of other fractures, the injured patient can hope for a return to active life with very slight, if any, residual pain. We can assure these patients that they will not be at all incapacitated, and that they will be as strong and active as they were before the accident.

CASE REPORTS

Case 1. Miss D. R., was seen in consultation on April 1, 1934, having been examined in the hospital emergency room very early in the morning of that day. She was riding on the back seat of an automobile when they were struck by another car turning their car over. She immediately experienced severe pain in the dorso-lumbar region. These pains radiated down both legs. A fracture of the lumbar spine was suspected. The first time I saw her I had antero-posterior and lateral roentgen rays of the spine made which showed a compression fracture of the first lumbar vertebra. The patient was so uncomfortable that I kept her in the best possible position hyperextended in bed with adhesive plaster strapping for about five days, until the shock, referred pain and distention had practically subsided. Then, under an anesthetic, I applied a plaster jacket on the Goldthwait frame with very good correction. She made an uninterrupted recovery. I sent her home in the plaster jacket which she wore for a few months with comfort, after which I designed and applied a Taylor back brace which she wore with equal comfort. She made a complete recovery, and is now back at work finishing her course as a student nurse.

Case 2. Master D. C., was kicked in the head by a horse on August 10, 1934. He was never unconscious. He was seen at once by the family physician who suspected a cervical spinal fracture on account of rigidity of the patient's neck, so roentgen rays were made. The child was brought to me August 15 on pillows, never having been allowed to raise his head. Several roentgen rays were made which showed an undoubted fracture of the odontoid process with very slight displacement. I immediately placed this patient in bed with head extension where I kept him for nine days. At the end of this time I applied a plaster jacket including the head. The patient made an uneventful recovery. The jacket was removed on October 9 and he has not had the slightest trouble since the accident.

Case 3. Miss G. C., came for opinion on August 14, 1934, having been thrown from a horse one year earlier. Roentgenograms were made at the time, and she was diagnosed as a case of sacro-iliac strain and advised to go to an osteopath. Luckily, she did not follow that advice. She remained in bed for five weeks; got up at the end of that time, but the pain still persisted. She tried to get about, but suffered so much that about a year after the accident she came for examination. On examination a slight kyphosis was found in the lumbar region, which, with the history of the accident, was very suspicious of fracture. Roentgenograms, antero-posterior and lateral, proved the diagnosis of compression fracture of the second lumbar vertebra. The patient is a very intelligent woman, and her comment was, after she had been told what her trouble was, "that she always thought something serious had happened." A modified Taylor back brace was designed which relieved her pain. She is now comfortable, and is actively at work as a school teacher.

Case 4. Mr. W. L., was seen in consultation March 18, 1935, giving a history of having fallen from a tree on March 15, when he suffered a Colles' fracture of the right wrist, and a spinal injury. Roentgenograms showed a compression fracture of the twelfth dorsal vertebra. The patient complained of a good deal of pain and discomfort at the site of fracture, but practically no referred pain. On March 18, under ethylene ether anesthesia, a plaster jacket was applied on the Johnson frame with very good correction. A roentgen ray was made before the plaster jacket was applied. The day following the application of the jacket, the patient was so very uncomfortable from distention, that he threatened to remove the jacket. After a good deal of persuasion, his family doctor convinced him that the jacket should be left on. Several days later the patient was very comfortable. He is still wearing the plaster packet.

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DISCUSSION

Dr. Guy A. Caldwell (Shreveport): Dr. Hatch has brought a very important subject to us, and has covered it very thoroughly. I think everyone who is handling and seeing many of the spinal injuries at this time is in thorough accord that in the first place roentgen rays, and careful roentgen rays, are essential to make the diagnosis, those to include lateral films. In the second place, after having recognized it, in a great majority of cases hyperextension is the method of correction, and this position of hyperextension should be maintained by the application of a plaster in the trunk portions and by the use of weights and pulleys with the neck hyperextended in the cervical portion.

This is unquestionably a move which has given us better results than we had before. I am perfectly willing to grant that very excellent functional results were obtained in many fractures, in the old days before this treatment was done, but, on the other hand, there were a great many of those cases which did suffer pain, and continued pain for years afterwards, either because the fracture line caused displacement of the articular facets, or because fusion was incomplete or because the trunk posture and the mechanical strain and stress on all of the supporting ligaments were altered. Unquestionably the results are better when we correct the alignment and the position.

I should like to show two or three slides which carry out and show the technic which Dr. Hatch has outlined in the application of the plaster and the correction of some of these cases.

(Slide). Here is a brief review of the cases at the Charity Hospital in Shreveport, over a number of years. This shows that the amount of permanent paralysis is most common where the lesion is most common, namely, lower dorsal in the upper region, and in the upper cervical region.

(Slide). Of interest is this old picture taken from Stimson's text book, showing that hyperextension was used and recognized by him as being essential before the days of roentgen ray being employed to recognize the fractures. We have come back to it in late years.

(Slide). This is the Goldthwait frame, which is the basis of the apparatus that is used for the correction of these fractures in the lumbar region.

(Slide). The principle, as Dr. Hatch outlined, depends on the integrity of the anterior ligament, and particularly the short interclavicular ligament.

(Slide). This is a modification of the Goldthwait frame. There is the thumb-screw which pushes the two supports together and increases the extension.

(Slide). This is the patient lying on the frame, under morphine and scopolamine for anesthesia.

(Slide). The gradual hyperextension, at which time a roentgen ray could be made to check the position.

(Slide). The application of the jacket with the posterior part, being sure that the anterior portion extends over the pubes.

(Slide). I have been a little later in the matter of exercise of patients. Toward the end of the first week, as soon as they are comfortable, we allow them to sit up. Those cases should be selected, with some care. A great many of them can be permitted to do so, and as far as I can judge, the end results are just as good.

(Slide). There is a roentgen ray before and after reduction on a patient.

Dr. Edward S. Hatch (New Orleans): I am glad that Dr. Caldwell showed some pictures of this frame which we are using that was designed by his associate, Dr. Johnson, and I believe all of you would be pleased with it.

As the time is very short, I did not report my cases, or show any slides. One important thing which we all noticed in the early days, when spinal fractures were not treated by hyperextension as much as they are now, was nerve-root pain. These patients improved, got back to work without paralysis, but many of them suffered from spinal nerve-root pain. Then pain in the upper and lower abdominal regions often was quite marked. While it did not prevent their going back to a gainful occupation, it did cause them pain and made them unhappy, but with the modern treatment of fractures of the spine we have very little of this with which to contend.

DEMENTIA PRECOX*

H. R. UNSWORTH, M. D.†
NEW ORLEANS

The problems of mental disease are considered under two headings: the psychological and the physiological. The psychological conception treats the phenomenon as a state of mind, while the physiologists believe that the manifestations of a psychosis are due to changes in the brain.

This paper will not attempt to discuss the psychology of insanity, but will endeavor to encourage the physiological and biological aspect as regards mental disorders in general, and specifically dementia precox.

There is no question but that it is impossible to have a purely psychic illness or a purely physical one. After all, illness is but a living event taking place in a living organism which is itself alive only by virtue of the fact that the psychic and somatic are a harmonious unit.

All biological teachings hold that the important point is not to regard the cell as an isolated or independent unit, but to consider the individual as a whole. Biologists agree that as long as cells remain in continuity they should be regarded as only specialized centers of action into which the body resolves itself, and by which means the physiological division of its functions are effected. This being true of the cellular and physiological elements of the organism, it seems reasonable to assume that any alteration in the psychic field will bear a direct relationship in its effect on the patient as a whole, and that it is truly impossible to say that any mental disorder including dementia precox can be explained on psychopathology alone.

Dunbar states that all medical problems should be studied and treated from the view of psychosomatic interrelationship. Modern medicine in general is keeping away from specialization, and does not consider diseased organs alone, disregarding the personality.

In caring for a large number of mentally sick in a psychopathic hospital, many of them having been admitted with a diagnosis of dementia precox, prolonged observation and study have proved the diagnosis in error, and a toxic or symptomatic condition was established, and clinically it was impossible to differentiate the psychic symptoms from those of the true precox. In all instances in which the diagnosis of toxic or symptomatic psychosis was made, the clinical laboratory findings substantiated the clinical diagnosis. In other instances, departmental medical pathology accounted for the cause of the mental disorder.

It will be recalled that the text books under the heading of dementia precox give five subdivisions, each of these considered to have certain mental symptoms belonging to a specific group. It is difficult for me to admit that any syndrome having a common pathology could express itself into illnesses whose symptoms differ so vastly, and in which the prognosis differs. Certain endocrine disturbances, post-obstetrical toxemias and pre-convulsive mental states, are in some instances identical with the psychic symptoms of dementia precox. Sometimes a period of months elapse before the true nature of the mental illness is established. In one instance, in a case at the De Paul Sanitarium, a generalized convulsive seizure terminated the psychosis which had simulated at all times the heberphrenic type of dementia precox.

Stransky states that the basic factor in the symptomatology of dementia precox is intrapsychic ataxia, which term means a disturbance of coordination between the intellectual attributes of the whole psyche and the affective attributes. Beuler admits the existence of intrapsychic ataxia, but thinks that it is only one expression of what he terms, "splitting of the psyche". Wolfsohn, in studying the hereditary factor in the cause of dementia precox, reported that of 2,215 admissions to an asylum at Zurich 90 per cent could be traced to an hereditary taint, but could not definitely state that heredity itself was responsible. Von Monakow advances the theory that the choroid plexus fails in its function as a selective filter for the products of metabolism and endocrine secretions due to degenerative changes in the plexus. He also states that emotional upsets and strong passions maintained for long periods

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†From the Department of Psychiatry, Louisiana State Medical Center.

made demands upon the plexuses that they could not measure up to. White states that there are many exciting causes, such as severe hemorrhage and infections, which precipitate the symptom-complex of dementia precox.

It is immediately obvious that the etiology of this mental disease is questionable. Certainly the physiological alterations due to emotions over prolonged periods or toxemias of any description, would produce a clinical picture psychically identical with that given as constituting the disease dementia precox.

The psychosis dementia precox is essentially a disease of the period of puberty and adolescence. In taking the histories of such patients it is common to find that they have been rather dull through their youth and have had difficulties in their school work. There is, of course, an occasional exception to this rule.

CASE REPORTS

Case 1. Mrs. H. L. was admitted to the De Paul Sanitarium April 2, 1935. At the time of her admission she had been considered a case of dementia precox, and the family had been advised to send her to the East Louisiana Hospital for the Insane, because the physician who had treated her had declared that she would not get well. Twenty-four hours after admission to the Hospital, examination revealed that she had a strawberry tongue, loose and offensive bowel movements and the epidermis over the knuckles showed definite pigmentation. The medical history revealed that she had never been sick mentally before, but that two members of her family, aunt and uncle, had been insane. The final diagnosis was pellagra with psychosis, and at the present time the patient is well on her way to recovery.

Case 2. Miss M. McG. was admitted to the De Paul Sanitarium January 7, 1935 at which time she was twenty-nine years of age. She was a graduate of a University and had never showed any previous mental illness. She was also a graduate nurse. The admitting history was to the effect that she was suffering with a severe pruritis, and that she had become hallucinated, running out in the halls of the General Hospital, where she had been a patient, answering to her hallucinations. The opinion given by the physician referring the case was to the effect that she was medically and serologically negative, and that it was his belief that she was a case of dementia precox. After a period of observation and study the patient was found to have a B.M.R. of minus 39 and a spinal fluid Wassermann 4 plus. After receiving treatment for her hypothyroidism and cerebrospinal syphilis she was discharged in the care of her relatives February 3, 1935, as completely adjusted mentally.

Case 3. Mr. T. P. was admitted to the De Paul Sanitarium June 15, 1934, a graduate of public high school, and was perfectly well until the year of 1931, at which time he became depressed and destructive. He was admitted to the State Hospital of Alabama in 1931 and was diagnosed as dementia precox. At the time of his admission to the Sanitarium here he showed evidences of a chronic physical illness. A skiagraphic study revealed that he had an active pulmonary lesion, tuberculous in character. Spinal fluid Wassermann at this time was returned 4 plus. After being treated for his pulmonary tuberculosis and cerebrospinal syphilis, he was returned home and made a fair adjustment for a period of a couple of months. He was thereafter readmitted to the De Paul Sanitarium in active psychosis and died with tuberculous pneumonitis.

CONCLUSION

It is my hope that the profession in general will give profound consideration to the patient presenting symptoms suggestive of dementia precox. Every available means should be used to explain the cause of his mental sickness before he is labelled dementia precox.

DISCUSSION

Dr. J. D. Young (Shreveport) I want to congratulate Dr. Unsworth on his complete presentation of this subject. However, I think that psychiatry falls down in a good many respects. Take your text books on psychiatry and look up the definition of dementia precox and see what you get. Definitions in psychiatry are too abstract, not concrete, deal in generalities a little bit too much.

Dr. Unsworth brings out the fact that in treating dementia precox or any type of psychosis it is essential that you consider the individual as a whole and not attempt to separate the nervous system from the somatic, which is correct. Man must be considered as consisting of dynamic energy systems and man's reactions must be considered in turn in terms of dynamic energy. A man's personality must be ever changing to meet the ever changing demands of environment. Of course, certain types of individuals are unable to adjust themselves to this changing environment and then develop certain defensive types of mental reactions. Kraepelin stated that if a case is diagnosed as dementia precox and recovers, the diagnosis is wrong. Of course, I do not believe that we exactly agree with Kraepelin to-day, because we do know certain types of dementia precox make a recovery or have remissions. Dr. Unsworth's

paper is a plea to be a little careful in labelling these as cases of dementia precox when there might be some other cause for this condition. I agree with Dr. Unsworth. Toxic infectious conditions may manifest themselves as dementia precox reactions or schizophrenic reactions but are not true cases of dementia precox.

Dr. Unsworth said he could not conceive that dementia precox in its five divisions could have one etiologic base. I do not know that I agree with Dr. Unsworth regarding this because you can have pneumonia and have five different types of pneumonia, and I think probably we can have five different reactive types of dementia precox caused by the same etiologic factors. I do not know. As to the cause, we have Adler's theory of inferiority complex, Freud's theory, Jung's theory, and many other theories. Dementia precox once labelled on to an individual is rather hard to remove, and I agree with Dr. Unsworth that we should be careful in the diagnosis of dementia precox.

Regarding the different types of treatment of dementia precox and reactions that might occur, in 1922, I experimented in cases of dementia precox using auto-serum made from patients, injected intra-spinally, on the theory that the choroid plexus was at fault. I used that same basis in research work in cases of epidemic encephalitis.

I still believe Dr. Unsworth is right that dementia precox is something different from schizophrenic reactions resulting from some toxic cause.

Dr. L. L. Cazenavette (New Orleans) I believe I am conservative when I say that over 50 per cent of cases in mental hospitals fall in the group of dementia precox. We meet these patients in hospitals after tragedies have occurred, in other words, when the family thinks, and the friends of the patient realize that it is time to put the patient somewhere in order to prevent any further ravages. This percentage compared to the percentage of patients who are precox, but not in the sense that they are actively disordered from the essential point of view, is really a very small percentage of those who really belong to the group of what we might call precox trend. Let me make myself a little more clear. An individual may have what has been accepted as a schizophrenic type of mental reaction, but he does not become schizophrenic, not actually mentally diseased, until it has increased to such a point that it is beyond his own control. In exactly the same way an individual may be of the maniac type, may be excitable, may be easily excited by nothing at all, but he does not become a maniac until the disease has actually made more pronounced involvement of his mental condition.

I believe that the fact there are so many patients presenting disorders along that line renders any discussion of the subject very much in order, and I think the presentation of the subject by Dr. Unsworth is a very good one. He tends—if I get it right—to differentiate what we commonly call precox condition from some definite groups or individuals not really in the group. Of course, the fact is we do not know definitely what dementia precox is. We study the reactions of these persons for the purpose of study and group according to reactions, but groupings of disease are merely a help to us for the study of these patients. The diseases themselves have no particular rule. One man may show particular symptoms and another man show other symptoms, and yet belong to the same group of disease.

I do believe what Dr. Unsworth has brought out in his paper is worthy of attention and it simply makes us more careful as to the diagnosis of these cases. We have to consider not only the mental condition of the patient but the physical and other conditions of the patient as well before making a diagnosis of dementia precox.

Dr. Roy Carl Young (Covington) I have enjoyed the paper of Dr. Unsworth very much. He brings out the very important fact that every case of mental disease should be studied as a whole, every case of mental disease should be given a thorough and complete examination and everything cleared up so far as the individual is concerned. I agree with Dr. Unsworth in wanting to limit the title of dementia precox to a smaller and more definite type of mental reaction. For instance, a case is sent in with a diagnosis of dementia precox and found to have cerebrospinal syphilis. The cerebrospinal syphilis is treated and the dementia precox cleared up. Primarily, the man was a case of cerebrospinal lues, symptomatically a precox.

I think Dr. Unsworth's paper is very timely. Every one of these cases has to be given a thorough check over.

We have at the Fenwick Sanitarium in Covington a case similar to the one reported by Dr. Unsworth. This case clinically is one of dementia precox but further study of the spinal fluid proved conclusively that it was chronic epidemic encephalitis with a precox symptomatology.

Dr. H. R. Unsworth (In conclusion) It has been my observation that too many patients with hallucinations and delusions are diagnosed dementia precox. A great number of these patients are later definitely found to be sufferings from a toxic psychosis.

TREATMENT OF ACUTE HEAD INJURIES*

RAWLEY M. PENICK, JR., M. D.†
NEW ORLEANS

For the want of a more exact designation, the term head injury is used to denote the traumatic lesions of the cranium and contained portions of the central nervous system. These injuries challenge our attention today as never before because each year brings an increasing number of these unfortunate accidents. It is also true that a good deal of disagreement exists as to the treatment of these cases. The object of this communication is to discuss certain procedures now in use, and to draw some conclusions as to their usefulness.

As you know the viewpoint on head injuries has varied from time to time. For years the fracture of the skull monopolized a major part of the physician's attention, but in recent years the effects of increased intracranial pressure have become better understood and this increased tension has been the point on which most of the therapeutic measures have been focused. No doubt, this is a wholesome advance, but I believe we should go a step further, and, without disregarding the effects of pressure, take into consideration those factors which are directly responsible for the increase in pressure, in other words, brain injuries. Therefore, to be complete, any attack on this problem must be directed at these lesions even though, in certain instances, our therapeusis assumes a negative character. As a direct attack is often impossible, most of our treatment is directed toward the management of increased pressure. It would seem wise, however, to avoid those procedures which might at the same time aggrevate the existing intracranial damage.

The lesions which can cause death *per se* or through the production of increased pressure are:

1. Concussion.
2. Edema.
3. Hemorrhage.
4. Contusion of brain tissue.
5. Laceration of brain tissue.

Exact data on the occurrence of these, following trauma, are comparatively meager. However, Vance's[1] series, in which he reports the autopsy findings in 507 cases, is an excellent source of information. This author found that 27 per cent died of concussion, death occurring within 10 hours. Hemorrhage played a definite part by causing compression of the brain in 38 per cent of the entire series. This figure is obtained by excluding small hemorrhages which Vance thought played only a minor role in producing the fatal outcome. Extradural hemorrhage large enough to cause serious symptoms was present in 12 per cent of the cases. Contusions and lacerations, often associated with hemorrhage, were frequently encountered. LeCount and Apfelbach[2] reported another similar series based on 504 autopsies but as they do not indicate the clinical significance of the various lesions their findings are of less value. Anyone digesting this material cannot fail to be impressed with the frequency of brain damage and associated hemorrhage as a cause of death.

Too often, treatment consists in a frantic effort to reduce intracranial pressure by lumbar puncture, by intravenous hypertonic solutions, by limitations of fluids by mouth, or by subtemporal decompression. The efficacy of these in temporarily reducing pressure cannot be denied, but their ill-timed use undoubtedly exerts a deleterious effect on the brain injury and thereby increases bleeding or edema. This is best illustrated in extradural hemorrhage. Here everyone agrees that any reduction in intracranial pressure tends to increase bleeding with resultant increase in cerebral compression; consequently no one advocates lumbar puncture, hypertonic solutions, and so forth, under such conditions. It would seem, however, that the same principles of hydrodynamics would apply to hemorrhages beneath the dura. Besides we do not treat hemorrhage anywhere else in the body by reducing pressure around the bleeding point, unless it becomes absolutely necessary, or is part of a maneuver to expose and ligate the vessel.

Lumbar puncture, properly used, will give a gradual reduction in tension and for that rea-

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son is of great value at certain times. Its chief disadvantage has been already pointed out, and is common to all pressure reducing procedures. The effects of hypertonic solutions intravenously are much more serious. Milles and Hurwitz[3] working with dogs, and later Masserman[4] using human beings, found that great variations in cerebrospinal fluid pressure were proproduced in a short period of time. At first there is an increase; this is then followed by a longer phase of decreased pressure, which in turn gives way to a level distinctly higher than normal, the last being maintained for some time. In his work Masserman used varied concentrations and varied amounts of dextrose solutions. All produced similar results, varying only in degree. Such rapid fluctuations in pressure allows hemorrhage and edema to increase during the phase of lowered pressure and then when high levels of pressure are again reached there is less room within the cranial chamber and compression of the vital centers takes place. It seems reasonable to believe that this mechanism explains the unfavorable reactions which sometimes follow this type of therapy.

Dehydration with magnesium sulphate by mouth, or per rectum, or by withholding fluids, has a more even effect on intracranial hydrodynamics. In the presence of shock or active bleeding such measures are contra-indicated. but under other conditions they form a valuable method of treatment, when judiciously used.

From these facts it would seem clear that treatment directed solely at reducing pressure may do actual harm. It is true that pressure cannot be disregarded when it threatens the patient's life, but until that time conservatism should, I believe, be the rule. If it becomes necessary to reduce pressure, the most conservative means which will cause the least intracranial disturbance should be the one of choice. My choice is lumbar puncture. From my experience it would seem that if this necessity arises before five hours have elapsed the patient's chances of recovery are very small.

When a serious head injury is first seen the patient is usually shocked. This phase requires the same treatment that shock from other causes does, namely, quiet, fluids and heat. Morphine should be avoided, if possible, because it depresses respiration and may later mask important symptoms. A suppository containing one grain of codeine and seven grains of trional gives excellent results as a substitute. It is my practice to omit roentgen rays at first, unless the patient is fully conscious, because it is of little value in determining treatment, and requires additional disturbance to the patient. Of course, the roentgenogram is valuable to demonstrate depressed fractures but a careful examination of the head will also disclose any such depression which is serious enough to require early operative interference. Roentgen rays are also important from the medico-legal standpoint; if necessary they can be taken after death.

The period of shock is followed by one of increased intracranial pressure. The patient becomes drowsy, pulse and respiration are slowed and the blood pressure becomes elevated. In this period the most trustworthy single sign is the state of consciousness. Next in value are the pulse and respirations. Careful observation is necessary to detect the rapid changes that often occur. In my opinion this is the time to do nothing unless forced to by the patient's condition. Diagnostic lumbar puncture within the first 24 hours is to be avoided. It involves doing something to the patient, and the information thus obtained is frequently deceptive. One often hears it said that it is an excellent way to distinguish between subdural and extradural hemorrhage; this is based on the misconception that in extradural hemorrhage the fluid is always clear. It is, if this is the only lesion, but in many instances there has been some bleeding beneath the dura and the spinal tap reveals bloody fluid. Conversely, it is also true that patients not uncommonly die of head injuries with no blood in the spinal fluid.

If there is evidence of increasing pressure, and it threatens the patient's life, then lumbar puncture is indicated. The fluid should be withdrawn slowly and enough removed to reduce the pressure above normal by half. This method of determining the amount of fluid to be removed is rather generally accepted. Spinal taps can be repeated when necessary. If spinal

drainage has not been necessary at first, it can be performed after 24 hours; then the pressure and character of the fluid are determined and are a guide to further treatment, for in the event blood is present, repeated taps may be used to clear the subarachnoid spaces and reestablish earlier normal absorption and pressure.

Not infrequently some operative measures cannot be avoided. Subtemporal decompression is still an operation occasionally used. Formerly a large percentage of serious head injuries were operated on, but in the last decade subtemporal decompression has become increasingly unpopular, more conservative methods have been substituted. It is perhaps safe to predict that in a few years this operation will be abandoned altogether. In my opinion the trauma incident to this procedure often overbalances the good effects, thus producing no benefit to the patient.

Lacerations of the scalp require suture, without drainage, within the first few hours following the injury. Compound fractures also require early surgery, at times with removal of comminutions or the elevation of serious depressions. However, it sometimes happens that minor degrees of depression are best left alone, even though suture of the overlying scalp is necessary. Uncompounded depressed fracture can usually be left alone until the patient's condition makes its elevation a safe procedure. Even when focal symptoms can be attributed to the depressed site, it is not worthwhile to jeopardize seriously the patient's life in order to elevate the fragment. Delay until the general condition improves is usually advisable because these cases stand operation very poorly, and it is also probably true, as Naffziger[5] has maintained, that focal signs which persist are due to an injury of the underlying cerebral cortex, produced by the force of the original trauma, and not dependent on the continued depression of the bone. These cases require a great deal of judgment and patience.

Major craniotomy is rarely indicated until the acute stage has been passed. The great exception to this, however, is with extradural hemorrhage. These cases have a latent period, or lucid interval, between the time of the injury and the onset of symptoms, then they develop increasing drowsiness, paralysis, and coma. Convulsions sometimes occur. The history and hemiplegia constitute the most reliable guides, but if serious doubt exists as to diagnosis a simple trephine will clear up the matter. Immediate craniotomy to evacuate the clot and ligate the vessel is imperative. The results are some of the most spectacular in surgery. One of my cases, deeply comatose during the operation which was performed without anesthesia, sat up on the operating table while the dressings were being put on and insisted on shaking hands before leaving the room.

In summary, it can be said that the treatment is becoming more conservative. However, every case is a problem in itself. I feel that any plan of treatment which does not take into consideration intracranial hemorrhage will be found wanting.

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DISCUSSION

Dr. Gilbert Anderson (New Orleans): I think this presentation of Dr. Penick's is very timely, because the presentation of the management of head injuries is always so. It can hardly be reiterated too frequently. We are getting these cases more and more, on account of the present methods of transportation, and it is becoming essential for the man who is isolated from a medical center to be conversant with the management of cases of this description.

To lay down a set of rules is a task that is certainly difficult, and one that I have found impossible. In a teaching connection with the institutions here, I have tried time and again to formulate a set of rules that could be posted in the wards for the guidance of the internes in the management of these cases, and every time that I have drawn up such a document I have had to destroy it. It is undoubtedly true, in this type of case particularly, that each case is a law unto itself, and if you attempt to follow any standardized

method of treatment on all cases you are surely going to get into trouble.

As Dr. Penick so ably brought out, many of these patients are brought in shock, and I think many of them have been damaged by having too much done at that particular time, or too soon afterwards. Unless the patient recovers from shock, you are not going to have any patient to treat anyway, so that the question of roentgen ray examination, neurologic examination, lumbar puncture, hypertonic solution, or what-not, must be deferred until you feel your patient has recovered from shock, and then, unless you are concerned regarding a depressed fracture, I do not see any hurry about taking the roentgen ray, because except in that particular instance it does not help you very much. If there is a hemorrhage you might like to know if a linear fracture had crossed the area of a particular artery, but I do not think the patient should be rushed to the roentgen ray room the very first thing, because you will not get sufficient information to justify the risk. I might say, however, I think every case should have roentgen ray examinations made some time from the standpoint of the medicolegal aspect, because just as sure as one of these cases comes to court and a roentgen ray examination has not been made, you can be made to appear to have been careless and negligent in the management of the case.

Regarding the use of the various methods for a decrease in pressure, I think they are valuable but dangerous. They are measures which have to be used with an understanding of the measure and of the condition of the patient, and where you set about to produce a decrease in intracranial pressure, by whatever means, it should be checked at frequent intervals by means of a spinal manometer. It does not necessarily mean that you have to draw off any fluid, but check your pressure, and a patient who is over-dehydrated will present practically the same picture as one with medullary edema.

I have two slides that touch on the controversial subject of spinal puncture, and whether or not it should be done. We are doing spinal puncture less and less in our cases at Charity Hospital, and I cannot see that our patients are suffering.

(Slide) I have here some figures from a report by Donald Monroe, based on 1450-odd cases from Boston City Hospital, and you see there in his cases treated by lumbar puncture he had 32 deaths, or a mortality of 9.4 per cent, and in his cases treated without lumbar puncture he had a mortality of 122 deaths, or 19.3 per cent. Of course there was a difference in the number of cases.

To amplify that to some extent I want to show the next slide, because if this one were taken just as it stands it might be very misleading.

(Slide) Here he compares the results on the four general surgical services for a period of three years, at about 1922, when very few spinal punctures were made, and the period of 1930 to 1933. On the first service you see there has not been any very marked change. You notice the per cent of spinal punctures has remained about the same. On the second, they have had a drop in mortality from 27.4 to 12.9 per cent, and at the same time they have had an increase in the cases treated by lumbar puncture from 16 to 57 per cent. On the third, you see the figures, and on the fourth they are controversial, but that is a very small series. But in those cases, you see in general the number of cases treated by spinal puncture is not very great, and it simply shows that they used care in the selection of the cases in which they use this method of decompression. I think it is probably the method of choice where decompression is desired, and secondly the use of hypertonic solutions enterically, and possibly third, the use of hypertonic solutions intravenously, but when they are used intravenously one must be careful for the second wave of adenia which may follow, and be prepared to repeat the injection if that does occur, in order to take care of that secondary wave. Bagley has shown rather conclusively that blood is a decidedly irritating substance, and when spinal fluid is bloody, one can later drain until it becomes clear. Usually it is clear after three or four taps but that is after the patient has recovered from the acute condition.

Dr. Lucian H. Landry (New Orleans): I wish to emphasize one point that was well brought out in the paper of Dr. Penick, that is in reference to the roentgen ray examination. In the majority of the accident cases brought into the hospital with a cranial injury, the tendency is to rush the patient to the roentgen ray room for an immediate picture; this is absolutely the worst possible teaching. The main concern is the amount of damage to the underlying brain. The fracture plays a relatively small part in the prognosis of the case. The only fractures that call for early surgical intervention are the depressed fractures and the vast majority of these fractures can be easily diagnosed without the use of the roentgen ray.

In the medico-legal cases the lawyers lay a great deal of stress on the existence or non-existence of a fracture and will try to belittle the doctor if a roentgenogram is not exhibited.

We must teach the lawyers that it is possible to have a severe intracranial lesion without the existence of a fracture and vice versa, that a long linear fracture may exist without any intracranial disturbance.

Dr. J. D. Young (Shreveport): I enjoyed listening to the paper, and also the discussion.

I think Dr. Penick, Dr. Anderson and Dr. Landry neglected to state that in treating a diseased

or injured brain a call for the help of the neurologist is paramount. I think if they used the neurologist more their successes might be better. We know that you can be guided quite a bit by your neurologic findings and, especially ophthalmoscopic findings, in these brain injuries.

As discussed by Dr. Penick, Dr. Anderson and Dr. Landry, the injury of the underlying tissue is most important. I mean the meninges and the brain. The treatment, as a rule, should be conservative, intelligent but radical when necessary.

I agree with the essayist that a period should elapse before any active measures are taken, and the period of shock should be passed by the patient before treatment is undertaken.

I do not know but that the doctors are right regarding he spinal puncture. We are getting away from spinal punctures in these patients, unless it is absolutely necessary.

Dr. Rawley M. Penick, Jr. (New Orleans): I am sure a great many people are wondering why I lay so much stress on taking roentgenograms, and why almost everyone who has discussed this paper has talked about that point. It is really distressing to see a patient in the hospital, completely shocked, being carted around, on a stretcher, lifted from the stretcher onto the roentgen ray table, his head probably manipulated, and then taken to the ward and a lumbar puncture done. That too frequently happens. And there is no doubt about it, that is not the way to treat shock.

From the standpoint of medicolegal cases, it is true that roentgenograms are very important, but I think the time has come for us to remind the judges and the jury and the lawyers that we are treating the patient for his best interests.

As to the question of the neurological examination, perhaps I did not emphasize that enough, because in the time allotted I was unable to discuss a good many things that I wanted to. But it is true that this is one of the most important things to do early, even when the patient is badly shocked a simplified examination can be done.

There is one thing that we have to keep in mind always in treating these injuries, that is extradural hemorrhage. This is something we can do something for, something we have to do something for, to save the patient. And there is no doubt about it, that the most reliable way to pick up an extradural hemorrhage is by a neurological examination. It is also true in cases where an extradural hemorrhage is seriously suspected, that it is wise under some conditions to trephine the patient, to be sure. That sounds like a rather radical procedure, but it is so important not to miss an extradural hemorrhage that it is often justified.

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CHARLES JEFFERSON MILLER

The medical profession of New Orleans and Louisiana was shocked to learn of the death of Dr. Miller on March 21, 1936. Dr. Miller had always been a man of vigor and activity and his death was certainly most unexpected. In the passing of this great gynecologist New Orleans, Louisiana and the medical profession of the South lose an outstanding man. His record of activities in his chosen field is a magnificent one. He was Professor of Gynecology in the Tulane Medical School; he was past-president of the American College of Surgeons; he was past-president of the American Gynecological Society and the Southern Surgical Association and the Orleans Parish Medical Society. His name and fame extended all over the United States.

In addition to his accomplishments and achievements as a surgeon Dr. Miller was a man of charming personality. Every one who knew him liked him and he was a much beloved physician to innumerable patients. Kindness and consideration were two of his outstanding characteristics. To the lowly patient in the public ward he was as attentive and devoted in service as he was to those of wealth and position. For years he gave faithful service to the Charity Hospital and the Touro Infirmary devoting his time ungrudgingly and happily to helping the unfortunate poor.

Dr. Miller's death leaves a void in the medical world of New Orleans which will be difficult to fill. Fortunately he has taught innumerable students, some of whom sooner or later will be able to follow their teacher's example.

CHARLES LOUIS CHASSAIGNAC

On March 21, 1936, died one of the older members of the medical profession of New Orleans who by his teaching and by his example had exerted a profound influence on the medical profession of the Parish, and State. Dr. Chassaignac for many years was actively interested in organized medicine. He served as president of both the Louisiana State and Orleans Parish Medical Societies. He was a member of the House of Delegates of the American Medical Association. He took an active part in the running of the Eye, Ear, Nose and Throat Hospital for eight years and for many years was Dean of the Tulane University Graduate School of Medicine. For twenty-six years Dr. Chassaignac edited the New Orleans Medical and Surgical Journal. His accomplishments in many fields were numerous and varied.

Dr. Chassaignac was always a good contestant to have on one's side but only if that particular side happened to be right would he be with you. He always maintained the very highest standards of medical ethics and always

he was willing to fight for what he believed just and proper. He was truly a gentleman of the old school, courteous and polite always, yet never afraid to express his opinion nor to reprimand one courteously and justly should the occasion arise. His services to the medical profession were greater than those which would be listed amongst his medical accomplishments because his standards were so high that his example influenced the profession as a whole. Dr. Chassaignac's death is a real loss to his numerous patients and innumerable friends.

ABDOMINAL PAIN IN DISORDERS OUTSIDE THE ABDOMEN

There is no doubt but that there have been performed in the past innumerable operations for some believed-to-be surgical emergency when in reality the pain and tenderness have depended upon some extra-abdominal disorder which has mimicked closely the symptoms of acute intra-abdominal conditions. Not always is the condition necessarily one that may require operation. In spite of the many papers and the oft-repeated statements of cardiologists there are still a large number of people whose cause of death is ascribed to acute indigestion, whereas in reality these people suffer from coronary occlusion. People do not die of acute indigestion except under the most remarkable circumstances. They do die with a regularity that is most depressing from coronary disease and the symptoms of the two conditions may resemble each other closely. Nearly every physician knows that a pleurisy and the onset of pneumonia, with fever and leukocytosis and so on, may resemble an acute appendicitis when the pain is referred down to the abdomen and is associated with hyperalgesia and muscular rigidity. These may be spoken of almost as classic expressions of conditions which ape one another but there are many other disorders which will produce abdominal pain and yet the cause may be far removed from the abdomen. From compiling a list of such conditions which have appeared in the literature for the past few years it might be said that 52 separate and distinct entities have been described in which the condition may at one time or another produce acute or chronic abdominal symptoms. These disorders range from the abdominal pain at the onset of measles to Addison's disease, from diseases of the urogenital tract to cerebral disease, from a cord tumor to abdominal pain produced by the uremic state. The important thing to remember is that abdominal pain is generally a symptom of abdominal disease but there is always the very strong possibility that it may be a symptom of some condition other than that which seems most likely. No patient should be operated on without a thorough and complete physical examination. The patient should be studied thoroughly from head to foot. In these various conditions that resemble abdominal disorders laboratory examinations are usually of small significance. Their interpretation depends upon the careful study of the patient and keen clinical judgment.

HOSPITAL STAFF TRANSACTIONS AND CLINICAL MEETINGS

OSCAR ALLEN TUMOR CLINIC
CHARITY HOSPITAL
NEW ORLEANS

The Scientific meeting of April was called by Doctor James T. Nix, Director. The essayist was Miss Louise Meyers, M. A., who presented the following paper:

EMOTIONAL FACTORS IN THE TERMINAL CARE OF CANCER PATIENTS

Emotional factors are present in any illness, particularly any chronic one, such as tuberculosis, heart disease or diabetes because a long period of hospitalization, inactivity, or radical change in the patient's usual way of living inevitably produces emotional disturbances. Cancer, likewise, on account of its prolonged terminal stage, causes great emotional upset, not only for the patient but for his family as well. There is always much anxiety over the patient's reaction to cancer, while little concern is shown over the friction that may arise in a family with a minimum income and few conveniences as a result of providing terminal care for a patient with cancer. The patient, of course, is miserable. He exhibits increased irritability due to pain, and marked introversion resulting from occupational and recreational inactivity. These manifestations, in turn, react on the other members of the family. The following cases il-

lustrate the emotional problems that are encountered in the terminal care of cancer patients.

Case I. A forty-two year old white man, Mr. Albert C., with generalized carcinomatosis, the original lesion being malignancy of the clavicle, required terminal care over a period of four months. The patient had intense pain in all parts of the body, the head, back, legs and chest. Roentgen rays showed evidence of the complete destruction of the sixth rib by the malignant process. He had a large decubitus ulcer on his side and pressure on this area could not be relieved because, while only minimum comfort was derived from lying on his left side, pain was intensified on the right side or back. What little appetite the patient had was capricious, and his wife's ingenuity was taxed to prepare tempting meals; and, even so, the food was either "too hot, too cold, or had cooked too long or not long enough." Throughout the four month period, the patient wanted his wife to remain with him constantly, even objecting to having relatives stay with him while she slept. During his fitful periods of sleep, the patient talked out loud and called for his wife. To make the situation worse, in November 1935 the family had no income. The patient, an unemployed pipefitter, had been on work relief with the Federal Emergency Relief Administration until his illness made it impossible for him to continue, but direct relief was given until the liquidation of the Federal Emergency Relief Administration. At that time the possibility of certifying Mrs. C. for work on a Works Progress Administration project was considered, but as the patient wanted his wife to care for him and although the children, two girls, were in high school it was considered a better plan for Mrs. C. to remain at home and for the children to continue in school, so relief was secured through the Department of Public Welfare. A visiting nurse from the Child Welfare Association was asked to give general nursing care, and the services of a maid from seven to two every day except Saturday and Sunday were arranged for through Works Progress Administration. In spite of these provisions, the family had little rest, sleep or quiet during the four months of terminal care. Mrs. C. never left the house during that period and the two girls were unable to have any friends in because it had been necessary to make the living room into a bedroom for the patient's use. Mrs. C., worn out by the time of Mr. C's death was simultaneously having menopausal symptoms. Examination in the clinic was urged but Mrs. C. was reluctant and wanted to investigate the standing of the doctors likely to treat her and choose the best one. She was terrified for fear she too might have cancer and would not be told. The fact that Mr. C. had not been told he had cancer nor had the seriousness of his condition ever been explained to him, leading Mr. C. to speak hopefully of the time he would be able to assume the support of his family, frightened Mrs. C. She was afraid that she would encounter the same protectiveness and evasion. The elder daughter had lost weight during her father's illness and while this was explainable, a check-up was considered advisable. She, however, became panicky at the mere mention of doctors and insisted that no matter what happened to her, she would never go to a physician or undergo any treatment.

This case illustrates not only the pronounced emotional and even physical disturbances produced in several members of the patient's family but also shows how the groundwork of resistance to medical care may be developed in members of the family of a patient with cancer.

Case II. Mr. Herbert M., 53 years old, a single white man, with diagnosis of recurrent carcinoma of the neck and tracheotomy, was doing road construction work in Shreveport, Louisiana, when he became ill and the tracheotomy became necessary. Although the patient was originally from New Orleans, Louisiana, he had been working in Shreveport for five years, having gone there following the death of his father. Ill, without friends or relatives in Shreveport, Mr. M. was homesick and wrote his only sister, to whom he was greatly attached, suggesting that he return home. This sister, who had always been the mainstay of the family and the one to whom every member in trouble turned, was eager to provide care. The sister, her husband, who was an "extra" engineer for a railroad, earning between $40 and $50 a month, and their two younger children, 10 and 12, as well as their 21 year old married son, his wife and their six month old daughter, lived together. The married son, a truck driver for an ice cream company working on commission and paying a helper out of his salary, averaged $18.00 a week in winter and $23.00 a week in summer. Rent was $18.00 a month and the house consisted of two bedrooms upstairs, a bedroom, bath, dining room and living room downstairs. When Mr. M. arrived, the family was distressed over his condition. They were helpless and had no idea how to care for him. The patient cleansed the tracheotomy tube as best he could but the odor was very noticable and made the daughter-in-law ill. The patient's whistling breath also made her ill, and afraid that the patient's condition was infectious, the daughter-in-law took her baby and went to her mother's home. The patient's sister, fearful that this might cause a break between her son and his wife, and exhausted through caring for the patient, brought him to Charity Hospital. Although hospital care was unncessary, it was felt that in view of the set-up in the sister's home, she could not be urged to take him back. Besides the sister, the relatives included two married brothers, one of whom was supporting his mother-in-law and father-in-law besides his own family. The wife of the other

brother who was financially unable to provide care become violently angry if the patient's condition was mentioned, insisting that his illness was no affair of hers and refusing to help in any way. Mr. M. could have been returned to Shreveport for care because during the five years he lived there, he was not dependent on any agency for relief, but on account of his devotion to his sister and his intense desire to be near her in New Orleans, this was not considered feasible. As relatives would not provide care and as residence in Shreveport made the patient ineligible for care in the Touro Shakespeare Home, the only institution in New Orleans accepting cases of malignancy, hospital care had to be continued until death. The tragic consequences of attempting to provide home care under circumstances where it is not reasonably tenable is demonstrated by this case. It illustrates the range of emotionalism brought about by the terminal care of cancer, including the fear that the baby would contract cancer, the possibility of inducing marital friction in the branch of the family not equipped to provide care, and the complete lack of sympathy and willingness to share responsibility on the part of the branch financially able to care for the patient.

In the following case, conflict arose over the fact that the patient's sister, eager to provide care at home regardless of the detriment to herself and child, was financially and physically unable to carry out such a plan.

Case III. Out of his earnings as a checker for a sugar refinery, Mr. Thomas T., a single, 52 year old white man with carcinoma of the left tonsil had supported his sister and her little girl for twelve years, because the sister's husband, a former insurance salesman, was insane. The sister's obesity as well as a large umbilical hernia, persisting after two hernioplasties, made it impossible for her to work. During the past year, however, as part-time employment only was available and as his illness made it increasingly difficult for the patient to work, in order to economize the family moved into a basement because the rent was free. The basement, one large room with no partitions, was damp and hard to heat. Privacy was impossible. When Mr. T. was no longer able to care for himself, on account of the difficulty of caring for him with a growing girl around, the child was sent to stay with first one neighbor and then another. This unsatisfactory arrangement was continued until the sister's physical condition and the child's illness made its further continuance impossible and the patient's admission to the hospital necessary. This separation distressed the sister because at the time of her mother's death she had promised always to look after Mr. T., her mother's favorite child. Since the patient had been "disappointed in love" and since his earnings had been used to support the family, the sister felt that she was not being fair to the patient. Mr. T., in turn, was unhappy in the hospital because there was no one to talk with and on account of lack of carfare his sister could not visit him daily.

Case IV. Mrs. Elizabeth D., a 50 year old white woman, had a radical excision of extensive malignancy, involving the entire maxillary bone. Hospitalization covered a two and a half month period and upon discharge dressings were to be continued at home with periodic re-examination. The patient, a widow, lived at home with her 21 year old son and 18 year old daughter and her stepmother who was also her aunt. The stepmother and daughter did the cooking, housework and laundry, and were in constant attendance on the patient because Mrs. D. became frightened when left alone and because moving about required assistance. The patient hated to leave the house or even sit out of doors because the bandages were disfiguring and people stared so. With glaucoma of one eye and the other having been removed at the time of the excision of the malignancy, Mrs. D. could not read or amuse herself in any way requiring sight. She usually sat indoors and whined. The dressings, done daily by a nurse from the Child Welfare Assocation, in order to save the patient the trouble of reporting to the clinic, according to the patient, were not done satisfactorily, being either too tight or too loose. The stepmother and the daughter took turns sitting with the patient and the stepmother had to sleep with her. If the stepmother demurred, the patient was hurt and felt that everyone was trying to avoid her on account of her unsightliness. The 18 year old daughter, Mary, had to stop vocational school because her mother wanted her at home. Mary's only recreation consisted of attending a Works Progress Administration English class three times a week. A maid was secured through the Works Progress Administration in the hope that Mary could return to school and have some time to herself but the patient objected and the maid was sent away. Mary, smiling, but with bitterness, said that her mother and stepmother seem to be afraid that the maid might relieve her of part of her share of the work. The centering of the entire household on the patient's eye drops of eserine, xeroform and sterile gauze dressings, and her periodic extractions of teeth, involved the family in a constant state of tension. Eddie, the son, in spite of the fact that he was obviously unsuited for clerical work, had to struggle to keep employment in a bank because his mother had always dreamed of his having a white collar job. After a day of uncongenial work, Eddie returned to the unhealthful atmosphere of his home. His reactions to Mrs. D's demands of attention and sympathy were bursts of anger, during one of which he struck Mary, giving her a black eye.

As long as there is cancer, these situations will be encountered again and again. The feeling of despair at the overwhelming burden of the patient's care and a desire to shift the responsibility of the patient's care may be considered a normal reaction of families without an adequate income or adequate housing to provide terminal care. Increased facilities for the care of chronics will help to meet these problems, but until that time they can be handled only through painstaking interpretation of the diagnosis and its implications of long-time care to the patient and to the family.

J. T. NIX CLINIC
NEW ORLEANS

At a meeting held in April, 1936, Doctor J. M. Perret read the following paper:

UNDULANT FEVER

Report of Two Cases with Unusual Findings: (1) Osteomyelitis, (2) Meningitis

The object of this paper is to place these two cases presenting unusual findings on record and thus to contribute in a measure to the symptomatology of a disease which is becoming common and important in this country and is so protean in its manifestations.

Case I. Osteomyelitis of left tibia. This was the case of a white girl, ten years of age, a native of Louisiana and a resident of Erwinville, Pointe Coupee Parish, Louisiana.

The clinical course was characterized by fever, headache and severe pains in the upper part of the left leg, near the knee joint. The fever began at the end of November, 1935, and lasted until the end of February, 1936, that is, about three months, and reached 104° F. The pains in the leg were over the upper anterior aspect of the left tibia and were very severe. They occurred in paroxysms four or five times a day, would last about half an hour, and continued over a period of about three weeks. There was sensitiveness to the pressure. The child kept the limb flexed at the knee.

It is well known that arthralgia, or joint pain, is very common in undulant fever, but up to the present time there is quite a paucity of reports in the literature of cases showing bone changes. Kulowski and Vinke[1] report a case of suppurative spondylitis, in which the roentgen ray showed destructive lesions in the interarticular facets. Feldman and Olson[2] report finding spondylitis in the hog.

Laboratory and roentgen ray findings Nov. 30, 1935, roentgen ray: No roentgen ray evidence of bone or joint pathology.

Dec. 2, 1935, Blood: Total white count, 8,000. Differential: Small lymphocytes 10, neutrophiles 64. Malaria, negative. Widal, positive in 1 to 160 dilution. Undulant fever, negative. Blood culture, negative.

Dec. 3, 1935, Blood: Total white count, 9,500. Differential: Small lymphocytes 24, neutrophiles 76. Widal, negative.

Dec. 3, 1935, Roentgen ray: Negative for bone or joint pathology.

Dec. 22, 1935, Blood: Total white count, 6,500. Differential: Small lymphocytes 37, large lymphocytes 5, neutrophiles 58.

Dec. 31, 1935, Urine: Negative.

Jan. 2, 1936, Blood: Undulant fever positive in 1 to 160 dilution.

Jan. 25, 1936, Roentgen ray: Osteomyelitis involving the upper and middle thirds of left tibia. The infection involves the epiphysis of the head of the tibia.

Feb. 27, 1936, Roentgen ray: Old osteomyelitis of proximal end of left tibia. No evidence of sequestrum formation. Condition apparently over radiograph of January 25, 1936.

Mar. 18, 1936, Roentgen ray: Old osteomyelitis in the upper portion of the tibia involving the central portion of the epiphysis as well as the diaphysis. Condition is improving and definitely limited.

Apr. 15, 1936, Roentgen ray: Old osteomyelitis upper end of left tibia involving the epiphysis. No evidence of sequestrum formation. Little if any roentgen ray change from previous radiograph.

Apr. 15, 1936, Blood: Total white count, 8,750. Differential: Small lymphocytes 36, eosinophiles 2, neutrophiles 62.

Treatment and Outcome. The treatment was symptomatic, physiotherapeutic and orthopedic. The child was kept in bed and light therapy was used over the painful part. For the contracture a Buck's extension was first applied, later on light plaster of Paris casts were applied to straighten the limb, and the patient was allowed to go about using crutches. At the time of writing this article, April 16, 1936, the fourth plaster cast was applied on this date. The knee joint and the periarticular structures are swollen and moderately painful. The limb is held flexed at an angle of about 30 degrees. How much permanent disability, if any, will result it is impossible to foretell at this time. It is apparent, however, that the child will require orthopedic treatment for a good while longer with the possibility that some surgical intervention may become necessary at a future date to remove the diseased bone.

Case II. Meningitis. The patient was a white female of 22 years, a stenographer, a native of Ohio but a resident of New Orleans for many years.

The clinical course of this case was very protean in its manifestations. Fever, which was the most prominent and constant symptom, lasted five

months and reached over 104° F. The respiratory symptoms were marked and were present from the onset until the end of the disease. They were more severe at the onset and were those of a bronchopneumonia. Cases with such pulmonary symptoms have been mistaken for tuberculosis. Frock[3] reports fifteen cases suspected of tuberculosis, who were found to have undulant fever.

As the patient was suffering from chronic cardiac valvular disease and as she ran a septic course, she presented the picture of a subacute bacterial endocarditis. Indeed, this similarity of undulant fever to subacute bacterial endocarditis has been noted in the literature[4]. I see no reason why in such cases the endocarditis might not be caused by undulant fever as we are dealing with a bacteremia. Classical symptoms of undulant fever such as joint pains, profuse sweats, headache and gastrointestinal upsets were present. The patient had also a maculo-papular, scarlatiniform eruption. I have noticed in other cases eruptions such as occur in typhoid and typhus fevers. As far as I know, I do not think that enough attention is given to these eruptions of undulant fever. In my experience, they have proved useful diagnostic suggestions. The meningeal symptoms made their appearance about a month after the onset of the disease. Headache, restlessness, vomiting and slight rigidity of the neck were present. Opisthotonos and Kernig's sign were absent. The case looked like a tuberculous rather than an epidemic cerebrospinal meningitis.

Bingel and Jacobsthal[5], writing in 1933, could find only four reports of neurologic complications of undulant fever. They added a case of meningitis of their own. Hartley, Millice and Jordon[6] reported a case of meningitis in 1934. In their paper they mention the case of Sanders reported in 1931, and a case of Hansmann and Schencken in 1932. The acute meningeal symptoms lasted about a month. After this for about six weeks the patient complained at times of headache.

The following is the neurological report of Doctor R. Unsworth who saw her on November 8, 1935. Neurlogical findings of meningitis: Spinal fluid under approximately 30 mm. mercury, straw color. Probably tuberculous meningitis. Recommendations: Frequent spinal drainage, every 48 hours. Repeated sputum examination for tubercle bacilli. Symptomatic handling.

Opthalmological examination by Doctor M. F. Meyer on November 18, 1935: Motility of eye muscles unimpaired. Eye grounds show no changes except a slight fullness of retinal vessels.

Laboratory and roentgen ray findings. Oct. 14, 1935, Blood: Total white count, 15,250. Differential: Small lymphocytes 26, neutrophiles, 74. Total red blood cells, 3,140,000. Hemoglobin 50 per cent. Color Index 0.8 plus. Malaria, negative.

Oct. 14, 1935, Roentgen ray of chest: Unresolved pneumonia in the lower portion of upper right lobe with a thickened interlobar pleura just below the region. Heart and aorta negative.

Oct. 15, 1935, Urine: Negative.

Oct. 20, 1935, Blood culture: Negative.

Oct. 28, 1935, Blood: Total white count, 9,500. Differential: Small lymphocytes 34, neutrophiles 66. Malaria negative.

Oct. 28, 1935, Roentgen ray of chest: Previously reported unresolved pneumonia, lower portion of the right upper lobe shows marked improvement.

Nov. 5, 1935, Sputum: Consistency thin. No blood nor elastic tissue. Pus present. Tubercle bacilli negative. Staphylocci, pneumococci and saprophytes present.

Nov. 8, 1935, Urine: Negative.

Nov. 8, 1935, Spinal fluid: Straw color. White cells 790 per cu. mm. Polys 90, lymphocytes 700. Globulin, 4 plus. Wassermann, negative. Colloidal gold, negative. Sugar, 30 mg. per 100 c. c.

Nov. 9, 1935, Urine: Trace of albumin.

Nov. 10, 1935, Spinal fluid injected into guinea pig. Reported negative January 31, 1936.

Nov. 13, 1935, Spinal fluid: Clear. White cells 10 per cu. mm. Polys 2, lymphocytes 8. Globulin, very slight increase. Sugar, 50 mg. per 100 c. c. Chlorides, 1.87 grams per cent NaCl.

Nov. 16, 1935, Sputum: Negative for tubercle bacilli. Many pus cells. Pneumococci, streptococci, staphylococci and saprophytes present.

Nov. 18, 1935, Roentgen ray of Sinuses: Negative.

Nov. 18, 1935, Spinal fluid: Cell count 8. Globulin, very slight increase. Sugar, 50 mg. per 100 c. c. Chlorides, 475 mg. or 0.475 grams per cent NaCl.

Nov. 18, Spinal Fluid Culture: Negative.

Nov. 26, 1935, Sputum: Tubercle bacilli, negative. Pus cells present. Staphylocci and streptococci present.

Nov. 27, 1935, Urine: Trace of albumin.

Nov. 30, 1935, Urine: Faint trace of albumin.

Dec. 5, 1935, Spinal fluid: Clear. Very slight xanthochromatic color. White cells, 4 per cu. mm. Polys 1, lymphocytes, 3. Culture, negative. Sugar, 90 mg. per 100 c. c.

Dec. 5, 1935, B. melitensis, negative; B. abortus, negative.

Dec. 5, 1935, Roentgen ray: Marked improvement of lung over previous examination though there is generalized increases of lung markings. Heart and aorta normal.

Jan. 20, 1936, Spinal fluid: Loaded with blood cells. Globulin, plus 1. Mastic test, negative. Wassermann, very weakly positive. Sugar 45 mg. per 100 c. c. Chlorides, 767 mg.

Jan. 24, 1936, Blood: Total white count, 11,000. Differential: Small lymphocytes 11, large lymphocytes 5, eosinophiles 3, neutrophiles 81. Total red blood cells, 5,140,000. Hemoglobin, 60 per cent.

Color Index, 0.6. Tularemia, negative. Undulant fever, positive in 1 to 160 dilution.

Jan. 24, 1936, Urine: negative.

Treatment and Outcome. The treatment had consisted of rest in bed, plenty of nourishment, medication to relieve symptoms, undulant fever vaccine (11 injections), spinal punctures and blood transfusion.

The case terminated fatally. It seems that the previously damaged heart was unable to stand the superimposed infection. The meningeal symptoms had cleared up and seemed in no wise contributory to the fatal outcome.

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THE HUTCHINSON MEMORIAL CLINIC

Scientific Section: Symposium on Thyroid Disease, conducted by the Department of Surgery, Dr. Ambrose H. Storck presiding.

The symposium was limited to those diseases of the thyroid gland in which the matter of surgical intervention arises. Dr. Storck opened the discussion by the presentation of three cases, one a white female of 52, who, following domestic and financial difficulties, developed characteristic findings of exophthalmic goiter except for unilaterality of of the exophthalmos; she was treated by subtotal thyroidectomy; one a white female, 28 years old with nodular goiter of 7 years' duration diagnosed as fetal adenoma or a cyst of such origin, without hyperthyroidism, operation being advised because of the frequent occurrence of malignant changes in this type of lesion; the third case a white female 58 years of age who had been operated for hyperthyroidism, presumably toxic adenoma, in 1915 with subsequent recurrence of symptoms and nodular masses in the thyroid area. Palpitation, headaches and hypertension were present. Removal of the recurrent thyroid tissue produced symptomatic relief, with a drop in blood pressure to normal range.

Dr. Storck: In the Department of Surgery we have been considering our cases of thyroid disease as follows: (1) Adolescent goiter or the colloid goiter occurring in children. (2) Nontoxic adenoma, which while nontoxic during its first appearance may, in later years, become toxic. Hertzler states that he is now seeing patients with toxic adenomas, whom he saw as children with colloid goiter, or in later adult life with nontoxic adenoma. He wonders whether the later-appearing toxic adenomas are entirely new and suggests that they are likely due to changes occurring in earlier-existing, simple nontoxic adenomas. (3) The toxic adenoma or toxic colloid goiter. (4) Typical exophthalmic goiter. (5) The apathetic type or "burned out" type of exophthalmic goiter characterized by extreme degree of weakness and muscular degeneration. (6) Fetal adenoma. (7) Cysts of the thyroid, which may be of two types: (a) those related to or arising in fetal adenomas and (b) the type which is due to confluence of cysts in a colloid goiter. (8) Carcinoma, sarcoma and rare tumors of the thyroid. (9) Aberrant thyroid growths, i.e., intratracheal, sublingnal, submaxillary and subsetrnal. Roentgen ray examination has become a most important adjunct in the diagnosis of these cases, especially in the instance of substernal and retroesophageal thyroid growths. (10) The inflammatory diseases of the thyroid as tuberculosis, syphilis, Riedel's struma, struma lymphomatosa, (Hashimoto), and acute inflammatory, suppurative and abscess-forming processes. (11) Degenerated thyroids—calcium deposition in thyroid. (12) Hypothyroidism—myxedema, cretinism.

An important development in the treatment of ocular complications of exophthalmos, and which I think deserves at least passing mention in this discussion, is the orbital unroofing operation devised by Naffziger for use in some advanced cases of exophthalmos, in which corneal ulceration or severe conjunctivitis may occur. This procedure may replace the performance of a blepharophimosis in at least some cases.

The adrenal-thyroid relationship which Crile has done much to popularize, may attract increasing attention, but I think most of us feel that as long as there is any definite enlargement of the thyroid in association with symptoms and signs of hyperthyroidism, the best procedure is still to remove the thyroid gland rather than to resort to adrenal denervation.

Dr. Musser: This woman with the unilateral exophthalmos is a rather unusual case. I could not see the right eye but it looked to me almost as if she had an enophthalmos. Very often one eye protrudes more than the other. Another feature is the fact that she is 52 years old. It is rather an exception to find exophthalmic goiter developing at this age. Another thing is the psychogenic origin. Psychic trauma so frequently is the match which lights the powder which causes the explosion in these cases. I think fundamentally these people are ready to be set off by some such spark.

The other patient, to my mind, presented a problem for treatment, and I am not at all sure that I would have acquiesced in final decision to oper-

ate on that patient. It is not definitely known that she had a fetal adenoma and more particularly since she has no signs of hyperthyroidism at the time. It is a nice question and for which much might be said on both sides.

Now a word or two on thyroidectomy in congestive heart failure. My experience has not been large. I must confess with some selected cases the results have been fine indeed. I showed a patient in clinic Wednesday who had been operated on fifteen months before and had a total thyroidectomy. She came back to us with a basal metabolic rate of minus 35. Prior to operation she was handicapped, and the cardiac system crippled; following the removal of the thyroid she has had only one attack. Another case with congestive failure in which Dr. Ochsner took the thyroid out was a woman who stayed in the hospital for two years and never went out without signs of congestive failure. Her thyroid was removed and we gave her very definite directions about what she was to do afterwards. She felt so well one day that she pitched in and did a day's washing and came in again with failure. I believe that if that woman had not overstrained her heart with severe effort doing this wash that she could have carried on for some years. The arguments pro and con thyroidectomy in congestive failure are becoming more and more acrimonious. The Boston group, notably Levine and Blumgart, and with the exception of Christian and Means, are enthusiastic indeed. These men point to numbers of cases with good results in congestive failure. On the whole I think the operation has not been as successful as the first reports would lead you to believe that it has been. A great many people have died when subjected to it. Furthermore some have had the misfortune to die on the table. It is not always because cases have been poorly selected. The men who are doing this rather intensively, contend that the misfortunes are due to poorly selected cases and there must be a certain amount of cardiac reserve before the patient may expect to derive any benefit from lowered demands of the heart. Dr. Christian and Dr. Hertzler feel this way; that if you take out the thyroid you are simply inducing another factor which may be difficult to control and which is giving the patient simply another disease. I might mention that there is not only the thyroid heart, but there is also a myxedema heart.

In the other type of cardiac failure associated with angina, the reports have been more satisfactory and many proponents are confining operative procedure to patients who have angina, and in patients with congestive failure are no longer removing the thyroid. This woman I just mentioned derived apparently no benefit from a sympathectomy but following the removal of the thyroid was markedly benefitted. In angina you are dealing with subjective fear; in congestive failure you have very definite physical evidence of something going wrong. The pain is a very real thing but I do think that sometimes after having had pain, minor attacks are exaggerated and I think sometimes the mere fact that you have taught the patient to take a calm, peaceful outlook on life and particularly to avoid effort, will cut down on the number of attacks and the minor attacks will disappear. There may be some slight psychic factor which may be responsible.

Dr. Dauer: Usually our conception of the geographical distribution of thyroid disease, particularly the adolescent or colloid type of goiter, is that it is most common in the Great Lakes region and in the northwestern part of the country. Previously most of the surveys have been limited to groups of school children in northern cities. It was not until the World War when men were drafted in the Army and had physical examinations that we were able to get a well-rounded idea of the distribution of thyroid disease in the entire country. I have jotted down the number of men per 1000 troops on a map of the United States to give you an idea of the distribution of simple goiter, remembering that the ratio of goiter among male and female is about 2 to 3. You see in the northwest the highest rates for simple goiter and to a less extent in the Great Lakes region. Notice that in this paricular region the rate was comparatively low all along the southern part of the United States and also along the eastern shore. I think it is rather interesting that this should have occurred along this shore-line since we do know that sea water contains a large percentage of iodine and seafoods have a higher content of iodine than any other food. In Massachusetts they have determined that chlorine was carried inland for fifty or sixty miles, probably by means of a fine spray of sea water. The same could occur with iodine. It is only the states on the immediate coastline that have a low incidence of adolescent goiter. Among the drafted men it was noticed that the highest rate was found among men coming from sparsely settled districts and secondly among those living in mountainous regions, and the lowest in agricultural sections of the country. There was not much difference so far as rural and urban districts were concerned. A few surveys have shown that the colloid goiter is more frequently found among colored than white children, the ratio being 3 to 2. It is rather interesting that the highest rates for exophthalmic goiter are found generally in districts where you have the greatest percentage of young people with colloid goiter.

Dr. Menville: The roentgen ray is of aid in diagnosing substernal goiters and particularly retroesophageal and retrotracheal goiters. However, we cannot say definitely from the roentgen ray film alone that certain tumor shadows are

goiters, but with clinical help the diagnosis is made easier. We can presume it to be so with the proper clinical manifestations and history. One of the most recent advances made in the treatment of toxic goiter has been by Borak of Vienna, who reported a large number of cases of toxic goiters in women around the menopausal period who had not been benefitted by certain forms of treatment, but who were markedly benefitted by irradiation of the pituitary gland. He considers that there is a close interrelationship between the pituitary gland and thyroid glands. We are firmly convinced by experience of the efficacy of radiation therapy in exophthalmic and toxic cases, and this form of therapy is now being used universally. There is no question but that surgery plays a predominant role in the treatment of this disease when handled by experienced goiter surgeons, but this does not always follow. Roentgen ray is by no means 100 per cent cure but on the whole we can say that from 66 to 76 per cent are cured by radiation therapy. A general average compiled from a series of 10,000 cases treated all over the country was 66.22 per cent. Ten per cent of these cases had previously been operated upon and had recurrences and were subsequently treated with roentgen ray or radium.

Dr. Perkins: I am sure that most of you are wondering what contribution we can possibly give to this controversial subject. I am interested in the point of view of some way of preventing it. Being interested primarily with the normal physiologic functions in the body, we recognize that here we have a function which is normally balanced and under some circumstances this balance becomes disturbed. We do not know how delicate or what the trigger element is. There must be a fairly sensitive balance. The whole story points then to the recognition of an increase in what is ordinarily a normal function; that is, increase of thyroxin secretion. For some reason this increasing factor becomes more powerful until the mechanisms go beyond their physiologic limits and result in pathological changes. From then on the goiter develops. The story behind that is the one which interests us most. As I speak on the possibility of prevention, I am speaking on very few known facts. The question has been raised as to what is the greatest initiating factor in producing secretion of thyroid. There have been three general ideas: (1) Iodine; the available supply of iodine, or the utilization of iodine by absorption and metabolism. This explanation seems to be going out of style; (2) the nerve control mechanism. This is also in doubt. There is no proof that it is a direct cause of the observed effect. It might still be the result of vasomotor changes; (3) the remaining explanation is in the field of the hormones. We are here dealing with the complex of hormones. Thyroid does not stand by itself. It is activated as the result of something preceding it. Whether or not it is primarily anterior pituitary lobe or adrenal is not known and doubt has been thrown on it. The tendency today is not so much in Crile's direction which favors adrenal action first but in the direction of disturbed secretions from the anterior pituitary. In confirmation of the latter view it has been found that transplants of thyroid tissue are markedly affected by extracts of pituitary.

When we try to think in terms of prevention we are thinking of what occurs before pathogenesis has even started. We are concerned of course in the early care of the thyroid case. Strict prevention aims at attacking the disease even before it is a disease. What, then, can we hope to do? Where can we look for our greatest efforts? Since the newest evidence today points toward the hormones and their interrelationship with the sympathetic nervous system, I feel inclined to agree with Dr. Musser; we should turn toward the psychogenic makeup. It may be a very basic fundamental constitutional fact. We would like to have some way of testing these individuals as to their susceptibility to develop thyrotoxicosis somewhat like the method of dipping hands up to wrists in cold water in order to determine instability of the blood pressure. I am pointing that as an example in an attempt to solve the problem before it arises. We know so little about constitutional diathesis that it behooves us all to think seriously of those patients who do not have a thyrotoxic condition but who are showing some of the things which we have seen tonight. This evidence may not be strictly causative. I confess from my own point of view, that I am much more concerned with regard to the habitus before goiter has made its appearance and certainly the thyroid itself does not originate its own disease.

Dr. Ochsner: There are just a few things I would like to emphasize. Whereas I think a surgeon would have been very critized ten years ago, with reference to Dr. Musser's statement in regard to one of the patients presented, we are becoming more and more convinced that the majority, if the patient lives long enough, will become toxic. We feel that extirpation of this nodule at the present time when the patient is in good condition is practicing preventive medicine. We will, in removing this, prevent occurrence of toxic goiter and the possibility of malignant change. I think that Dr. Menville has been very fair in his evaluation of roentgen ray. Most radiologists say that no one ever dies of roentgen ray therapy. The important thing is that if the patient does not respond, then something else should be done because the patient may not die from roentgen ray but from progression of the disease. That is true not only of thyroid diseases but malignancies. If the condition does not re-

spond, it should not have prolonged roentgen ray treatment. Due to the iodine therapy the necessity for repeated operations is becoming more marked. For instance, many of us know, before the introduction of iodine preoperatively the mortality rate following thyroidectomy was high. With the introduction of iodine therapy the mortality rate fell. We now are seeing individuals who are iodine fast who have been given iodine over long periods of time. They are in much worse shape than patients whom we saw before. While iodine should be given and is curative in adolescent goiter, it should not be prolonged over a long period of time. The incidence of repeated operations necessary in these cases is much higher than before. Dr. Lahey states that in his clinic the number of cases requiring stage operations is approximately 40 per cent. Undoubtedly, it is due to the promiscuous administration of iodine as a preoperative measure. This is particularly important in this type of symposium where all departments are interested. I know of nothing which requires the cooperation between all departments quite as much as thyroid disease and I think we have all gotten a great deal out of the presentation. There is no one method of therapy. We have to distinguish in toxic cases between toxic adenoma and exophthalmic goiter. In toxic adenoma, if the patient is in any shape at all, a cure will be obtained in practically 100 per cent. Although both conditions are toxic, the underlying factor is different. Whether it is originally a fetal adenoma certainly makes the prognosis different from the standpoint of ultimate cure. We feel more and more that these severely toxic cases have to have radical resections. The only recurrences which we have had have been in those cases in which we have not been radical enough. In the very toxic cases, the ultimate goal should be a subtotal thyroidectomy.

HOTEL DIEU

The regular monthly meeting of the Staff of Hotel Dieu was held on Monday, March 16, 1936 at 8:00 p. m. in the Nurses' Lecture Room of Hotel Dieu.

The meeting was called to order by the President, Dr. E. H. Walet, and with the Secretary, Dr. J. A. LaNasa, at the desk.

The Scientific Program consisted of:

a. "Psittacosis", by Dr. H. E. Hasseltine, Medical Officer in charge of the Marine Hospital, Carville, La. Discussed by Drs. Dimitry and Unsworth.

b. "Pansinusitis", by Dr. G. Taquino. Discussed by Drs. Dimitry, Levy, Unsworth, and Anderson.

A recess of one minute was ordered by the Chairman after which the meeting resolved into Executive Session. The meeting was then adjourned.

NORTH LOUISIANA SANITARIUM STAFF MEETING

The regular monthly meeting of the North Louisiana Staff was called to order on March 24, 1936, by the President, with 29 members present. After the disposal of routine business, attention was turned to the scienific program.

Dr. L. W. Gorton presented a patient who was of interest due to difficulty in diagnosis. The patient had complained of pain in front of the right auricle for six years and was treated for furunculosis. In November 1935, the patient consulted Dr. Gorton and was treated for an otitis externa due to a fungus infection. Subsequently, on finding a facial nerve weakness, a roentgen ray was taken and revealed a marked involvement of the right mastoid for which an extreme radical mastoidectomy was done. To date the patient has had an uneventful recovery. The case was discussed by Drs. Rigby, Crebbin and Riggs.

Dr. Stamper reviewed the subject of cancer of the prostate and cited several cases of the various types, and presented a patient upon whom he had operated for cancer of the prostate some time ago with satisfactory results. Drs. Edwards and Anderson discussed the treatment of cancer of the prostate by radium and roentgen ray.

H. M. Trifon, M. D., Sec.

TRI-STATE HOSPITAL

Following dinner the meeting called to order by Dr. J. E. Knighton, Sr., on March 26, 1936, with 25 members of the regular staff present.

Supplementing the case discussion of the last meeting by Drs. Cole and Gorton, it was reported that the child had dislodged an apple stem from the larynx, since which time an uneventful recovery had been made.

Dr. W. B. Worley presented the case of a white male, 8 years of age, whose symptoms consisted of severe pain in left leg with tenderness over the lower third femur and high fever. A tentative diagnosis of osteomyelitis was not confirmed and the patient later developed multiple abscesses and pyuria. It is evident that Staphlococcus albus septicemia exists and fair progress is being made with supportive treatment.

Dr. Thos. J. Bush reported a case of diverticulitis with partial intestinal obstruction in the sigmoid region, which was due to inflammatory stages about the diverticulum. At operation it was possible to remove the inflammatory mass and the diverticulum with resultant alleviation of symptoms and prompt recovery.

Dr. J. E. Knighton, Jr. reported a case of splenomegaly and widespread lymph glandular enlargement in a white male 33 years of age. Several

conflicting statements in the history and abnormal physical findings confused the diagnosis of Hodgkin's disease, but autopsy findings proved this to be correct.

These cases were discussed by various members of the staff.

After discussion of the statistical and mortality reports the meeting adjourned. The next meeting will be held April 23, 1936.

J. E. Knighton, Jr., M. D., Acting Sec.

THE SHREVEPORT EYE, EAR, NOSE AND THROAT SOCIETY

The Shreveport Eye, Ear, Nose and Throat Society met in regular session at the Charity Hospital, the evening of Monday, April 6, 1936, at 7:30 o'clock. The president, Dr. L. W. Gorton presided. The following members were present: Drs. Mann and Kirkpatrick from Texarkana, Ark.; Dr. Smith of Magnolia, Ark.; and Drs. Atkins, Crebbin, Bean, Boaz, Gorton, and Wilkinson, of Shreveport, La.

The scientific program consisted of seven cases:

1. Dr. Atkins presented an intereting eye case in a young colored woman. Although of rare occurrence, it was generally conceded to be retinitis proliferans.

2. Dr. Mann presented an interesting case of trachoma of about thirty years' duration. The conjunctiva was remarkably clear for such a protracted case.

3. Dr. P. M. Smith presented an interesting nose lesion in a white man of 76 years of age. There was ulceration and scabbing of the nasal septum which had refused to heal from any treatment that had been given. On account of his age and several skin lesions about the face it was thought most likely that his trouble was an epithelioma.

4. Dr. Boaz presented a cose of trachoma. He also presented a traumatic injury of the eye in which there was perforation of the cornea and herniation of the iris in which no medical treatment had been given. The unusual feature was that nature had provided a conjunctival flap and the wound had healed completely.

5. Dr. Gorton presented two cases of keratitis, which had not yielded to treatment over a period of about three months. There was lengthy discussion as to the classification and further treatment of these cases.

A letter from Mrs. William A. Porteous, Secretary of the Louisiana Society for the Prevention of Blindness, was read and discussed. It was moved and seconded that the various oculists of the city be requested to list all patients having a vision of less than 20/70 or better than 20/200 after correction with glasses, and that they be reported to Dr. Wilkinson, who will in turn notify the local chairman of the Society for the Prevention of Blindness.

The secretary was authorized to have necessary cards printed for the notification of meetings and present the bill for same at the next meeting of the Society.

J. A. Wilkinson, M. D., Sec.

TRANSACTIONS OF ORLEANS PARISH MEDICAL SOCIETY

CALENDAR

MAY 1. Pathological Conference, Hotel Dieu, 11 A. M. to 12 Noon.

MAY 4. Board of Directors, Orleans Parish Medical Society, 8 P. M.

MAY 4. Eye, Ear, Nose and Throat Hospital Staff, 8 P. M.

MAY 6. Clinico-Pathological Conference, Touro Infirmary, 11:15 A. M. to 12:15 P. M.

MAY 6. Board of Governors, 1st and 2nd District Dental Society, 8 P. M.

MAY 6. Mercy Hospital Staff, 8 p. m.

MAY 8. Pathological Conference, Hotel Dieu, 11 A. M. to 12 Noon.

MAY 11. ORLEANS PARISH MEDICAL SOCIETY, 8 P. M.

MAY 12. Charity Hospital Dental Staff, 8 P. M.

MAY 13. Touro Infirmary Staff, 8 P. M.

MAY 15. Pathological Conference, Hotel Dieu, 11 A. M. to 12 Noon.

MAY 15. French Hospital Staff, 8 P. M.

MAY 18. Hotel Dieu Staff, 8 P. M.

MAY 19. Charity Hospital Medical Staff, 8 P. M.

MAY 20. Clinico-Pathological Conference, Touro Infirmary, 11:15 A. M. to 12:15 P. M.

MAY 20. Charity Hospital Surgical Staff, 8 P. M.

MAY 20. 1st and 2nd District Dental Society, 8 P. M.

MAY 21. Eye, Ear, Nose and Throat Club, 8 P. M.

MAY 22. Pathological Conference, Hotel Dieu, 11 A. M. to 12 Noon.

MAY 22. I. C. R. R. Hospital Staff, 12 Noon.

MAY 25. ORLEANS PARISH MEDICAL SOCIETY, 8 P. M.

MAY 26. Baptist Hospital Staff, 8 P. M.

MAY 27. Clinico-Pathological Conference, Touro Infirmary, 11:15 A. M. to 12:15 P. M.

MAY 29. Pathological Conference, Hotel Dieu, 11 A. M. to 12 Noon.

During the month of April, besides the regular meeting of the Board of Directors, the Society

held one joint scientific and first quarterly executive meeting and one special meeting. The Board of Directors held one special meeting to discuss the Social Security Act.

The meeting of April 13 was dedicated to Safe Driving, and the following program was presented:

The New Pharmacopoeia.

By:.....Dr. Oscar W. Bethea

SAFE DRIVING

Neuro-Psychiatric Aspect: By Dr. Frederick L. Fenno.

Surgical Point of View: By Dr. Emmett Irwin.

Vision: By Dr. Chas. A. Bahn.

Medical Viewpoint: By Dr. Shirley C. Lyons.

Motion Picture.

Recapitulation: By Dr. James T. Nix.

Reports of the Officers and special and standing committees for the first quarter were read.

The following resolution incorporating the fundamentals of Safe Driving were presented by Dr. Jos. C. Menendez:

WHEREAS, there is at present being conducted throughout this city and state a campaign to support safe driving measures, and

WHEREAS, the safety committee of the Orleans Parish Medical Society has closely studied the efforts being made in this campaign, and

WHEREAS, the safety committee has suggested that the campaign be extended to enhance the physical, mental, moral, and medical qualifications of the applicant, therefore,

BE IT RESOLVED, that the Orleans Parish Medical Society go on record as endorsing the safe driving movement; that the members of the Society, will by their conduct, influence, and example, lead the way to safe driving; that the Society will work and cooporate with the officials in charge of this movement and with all civic bodies so engaged; that the Orleans Parish Medical Society offer and stand ready to work out any medical problems that may arise in the course of the campaign.

BE IT FURTHER RESOLVED, that copies of this resolution be made, and placed on record with the authorities in charge.

A special meeting of the Society was called by the President for April 20. The following program was presented:

Childhood Tuberculosis.

By:.....Dr. Horton Casparis
Professor of Pediatrics, Vanderbilt University.

The Diagnostic and Prognostic Significance of Positive and Negative Sputum.

By:.....Dr. Max Pinner
New York State Tuberculosis Hospital, Oneonta, New York.

Epidemiologic Aspects of Tuberculosis.

By:.....Dr. P. P. McCain
Superintendent and Medical Director of the North Carolina Sanitorium, Sanitorium, N. C.

Compression Therapy.

By:.....Dr. L. J. Moorman,
Past President of the Southern Medical Association, Dean, Medical School University of Oklahoma, Oklahoma City, Okla.

The regular meeting scheduled for April 27 was dispensed with because of confliction with the meeting of the Louisiana State Medical Society at Lake Charles.

At the organization meeting of the Louisiana-Mississippi Ophthalmological and Otolaryngological Society held recently at the St. Charles Hotel, Dr. J. Raymond Hume was elected President and Dr. Val. H. Fuchs was elected a Councilor.

The following doctors were elected to Active Membership and introduced to the Society at the meeting of April 13: Drs. Frank F. Gambino, Jr., Henry D. Ogden and Meyer D. Teitelbaum.

Dr. Hans Schroeder resigned from Active Membership because of removal to California.

Dr. Daniel N. Silverman was notified of his election to the International Society of Gastro-Enterology. This appointment followed a meeting of the International Congress of Gastro-Enterology which met in Brussels last year.

TREASURER'S REPORT

ACTUAL BOOK BALANCE 2/29/36	$ 2,055.23
March Credits	$ 1,776.04
TOTAL CREDITS	$ 3,831.27
March Expenditures	$ 1,123.85
ACTUAL BOOK BALANCE 3/31/36	$ 2,707.42

LIBRARIAN'S REPORT

During March 45 books were added to the Library. Of these 2 were received by purchase, 6 by binding, 16 by gift and 21 from the New Orleans Medical and Surgical Journal. Notation of new titles of recent date is given below.

The Library has loaned 765 books and journals to doctors during the month, or approximately 1½ to each member of the Society. In addition 1383 volumes were loaned to students for overnight use, making a total of 2148. These figures do not include the great use of books and journals within the Reading Rooms.

On request of physicians, members of the staff have collected material on the following subjects in March:

Liver extract in hemophilia.

Lymphatico-venous fistula.

Haemolymph nodes.

Medico-legal aspects of electric burns.

Hospital libraries.
Lower uterine segment.
Accident prevention.
Therapeutic fever in nervous and mental diseases
Blindness in migraine.
Medical, psychiatric, surgical, ophthalmologic aspects of requirements for drivers' license.
Adenocarcinoma of bladder.
Roman and Grecian baths.
Method of staining a diabetic pancreas.
Diathermy in cardio-respiratory diseases.
Chemical bronchitis.
Vomiting in pregnancy.
Anesthesia and analgesia in labor.
Fibroma of ovary.
Uterine bleeding.
Cyclopropane.
Merthiolate.

NEW BOOKS

Jameson, Edwin—Gynecological and Obstetrical Tuberculosis. 1935.

Sherwood, N. P.—Immunology. 1935.

Slemons, J. M.—John Whitridge Williams. 1935.

Dick, G. F. ed.—Yearbook of General Medicine. 1935.

Mary Imogene Bassett Hospital—Clinical Miscellany. v. 2. 1935.

Beaumont, G. E. R.—Recent Advances in Medicine. 1936.

U. S. Navy Dept.—Statistics of Diseases and Injuries in U. S. Navy. 1935.

American Neurological Association—Transactions. 1935.

DeRivas, Damaso—Clinical Parasitology and Tropical Medicine. 1935.

Potter, P. S.—Pediatric Treatment. 1935.

Singer, Edward—Fasciae of Human Body and their Relations to the Organs they Envelop. 1935.

Katzenbogerm Solomon—Cerebrospinal Fluid in its Relation to the Blood. 1935.

Zilboorg, Gregory—Medical Man and the Witch During the Renaissance. 1935.

Cameron, D. E.—Objective and Experimental Psychiatry. 1935.

Clark, W. I.—Industrial Medicine. 1935.

Myers, J. A.—Diseases of the Chest. 1935.

Greenhill, J. P.—Obstetrics for the General Practitioner. 1935.

Haggard, W. D.—Surgery, Queen of the Arts. 1935.

Duncan, G. G.—Diabetes Mellitus and Obesity. 1935.

Allison, Nathaniel—Diagnosis in Joint Diseases. 1931.

Shelling, D. H.—Parathyroids in Health and Disease. 1935.

Baumgartner, Leona—Bibliography of the Poem Syphilis. 1935.

Weisenburg, Theodore—Aphasia. 1935.

Haynes, William—Men, Money and Molecules. 1934.

Claoue, C.—Donnees anatomiques en vue de la chirurgie reparatrice mammaire. 1935.

Douglass, S. A.—Organization of a Rural Tuberculosis Service. 1930.

Milbank Memorial Fund—Review. 1936.

U. S. Public Health Service—State and Territorial Health Officers—Transactions. 1935.

Gilbert C. Anderson, M. D.,
Secretary.

LOUISIANA STATE MEDICAL SOCIETY NEWS

LAKE CHARLES MEETING

The Lake Charles meeting is being held while the Journal is in press consequently it will be impossible to do anything but forecast as to what happens at the meeting. From all indications this meeting promises to be one of the largest and most successful ever held in this State. The local Committees have worked hard and faithfully and have prepared an excellent program and social events. The Chairmen of the Sections have also arranged a program of scientific interest that has rarely been equaled at a Louisiana State meeting. Altogether if the weather is propitious and if the epidemic continues to decline a very large number of doctors throughout the State will enjoy the features of reason, science and sociability that have been prepared for them.

AMERICAN MEDICAL ASSOCIATION MEETING

The Annual Meeting of the American Medical Association will be held in Kansas City the week of May 11. A very splendid program has been provided which includes scientific and economic presentations and social events. Clinics have been arranged just previous to the opening session on Monday of that week and as usual the scientific exhibits will be outstanding. This is undoubtedly the meeting of the year and no medical man should afford to miss it.

THE AMERICAN ASSOCIATION FOR THE STUDY AND CONTROL OF RHEUMATIC DISEASES

The American Association for the Study and Control of Rheumatic Diseases is holding its fifth conference on rheumatic diseases at the Phillips Hotel, 3rd floor, on May 11 at 9 o'clock in Kansas City. There are on the program such well known men as Drs. Russell Haden, Joseph L. Miller, Frank D. Dickson, Ralph A. Kinsella, Philip S. Hench, William J. Kerr.

AMERICAN MEDICAL GOLFING ASSOCIATION

The American Medical Golfing Association will hold its twenty-second annual tournament at the Mission Hills Country Club and the Kansas City Country Club in Kansas City on Monday, May 11, 1936. There will be seventy trophies and prizes contested for. All male Fellows of the A. M. A. are eligible if they belong to the Association. The Executive Secretary, Dr. William Burns, 2020 Olds Tower, Lansing, Michigan will supply necessary application blanks to be filed before obtaining membership.

AMERICAN HEART ASSOCIATION, INC.

The twelfth Scientific Session of the American Heart Association will be held on Tuesday, May 12, 1936, from 9:30 to 5:30 p. m., at Hotel Phillips, Kansas City, Missouri. The program will be devoted to cardiac insufficiency.

THE AMERICAN PUBLIC HEALTH ASSOCIATION

The oldest and most powerful association of public health workers in the United States will meet in New Orleans, October 20, for its 65th Annual Meeting. Representatives from every State in the Union and from many of the countries in the Americas and from the various branches of Federal, State and other health departments will meet at this time. The new Surgeon General of the United States Public Health Service, Dr. Thomas A. Parran, Jr., is President-Elect of the Association.

OTHER MEETINGS

The First International Congress of Sanatoria and Private Nursing Homes will be held in Budapest, September 1936.

The National Conference of Social Work will meet in 63rd Annual Convocation at Atlantic City May 24-30.

The Annual Meeting of the American Association for the study of Goiter will be held in Chicago, June 8-10. Papers will be presented by such distinguished students of goiter as: Collip, of Montreal; Pemberton, of Rochester; Means, of Boston; Coller, of Ann Arbor and Lerman, of Boston.

NEWS ITEMS

Past Assistant Surgeon D. C. Elliott has been relieved from duty at the United States Marine Hospital, New Orleans and assigned to the Scientific Research Division.

Surgeon O. E. Denny has been relieved from duty at the United States Quarantine Station, New Orleans and has been directed to report to the Governor of the Panama Canal Zone for duty as Chief Quarantine Officer.

Assistant Surgeon Charles F. Blankenship has been relieved from duty at the United States Marine Hospital.

Past Assistant Surgeon F. S. Fellows has been relieved from duty at the United States Marine Hospital.

The following Louisiana doctors have appeared on the program of the meeting of the Medical Association of the State of Alabama from April 21 to 23, 1936: Dr. Edgar Burns, "Surgery of the Prostate"; Dr. John H. Musser, "Abdominal Pain Due to Extra-Abdominal Conditions"; Dr. Francis E. Lejeune, "The Human Larynx: Motion Picture Demonstration."

BROADCASTS FROM THE KANSAS CITY SESSION

Special radio programs will be broadcast from Kansas City during the week of the annual session.

NATIONAL BROADCASTING COMPANY

The following programs will be delivered over a network of the National Broadcasting Company:

May 11, 4:30 p. m.: "Nutrition and the Future of Man," by Dr. James S. McLester, President of the American Medical Association. Fifteen minutes.

May 12, 4 p. m.: Medicine Marching Forward. The regular dramatized program Your Health (originating in Chicago), based on papers or exhibits presented at the convention. Thirty minutes.

May 13, 12 noon: An interview about the Scientific Exhibit with Dr. Morris Fishbein. Fifteen minutes.

COLUMBIA BROADCASTING SYSTEM

The following programs will be broadcast over a network of the Columbia Broadcasting System:

May 11, 1:30 p. m.: An interview with one or more distinguished foreign visitors by Dr. Morris Fishbein. Subject to be announced. Fifteen minutes.

May 15, 2 p. m.: A news broadcast outlining the main events of the convention. Dr. W. W. Bauer. Fifteen minutes.

May 15, 8:45 p. m.: Medicine Yesterday and Today. A dramatized program (originating in Chicago), based on papers or exhibits presented at the convention. Thirty minutes.

The hour given is central standard time; eastern standard time is one hour later, mountain time one hour earlier, and Pacific time two hours earlier.

INFECTIOUS DISEASES IN LOUISIANA

Dr. J. A. O'Hara, Epidemiologist for the State of Louisiana, has furnished us with the weekly

morbidity reports for the State of Louisiana, which contain the following summarized information: For the week ending March 21, the grip epidemic which has been raging was still unabated, there being 385 cases of influenza listed this week as contrasted with 111 the previous week. Other diseases listed in double figures included 84 cases of measles, 47 of pneumonia, 40 of syphilis, 23 of malaria, 28 of whooping cough, 18 of pulmonary tuberculosis, 15 each of scarlet fever and diphtheria and 14 each of chickenpox and cancer. Of the unusual diseases there was 1 case of undulant fever, 1 of encephalitis and 2 of meningitis, all from Orleans Parish. For the week ending March 28 there was a slight decrease in the number of cases of influenza, there being 279 reported. This week pneumonia reached the very high figure of 112 cases, many of which were probably influenzal pneumonia. Seventy-five cases of syphilis appeared in the list and 90 cases of measles. Other important diseases include 82 cases of whooping cough, 54 of chickenpox, 35 of pulmonary tuberculosis, 26 of malaria, 22 of scarlet fever and 14 of cancer. Three cases of meningitis, all from Orleans Parish. For the smallpox was reported from Iberville Parish. This week there was a larger number of contagious diseases reported than had been reported for a very long while. The grip epidemic apparently rached its peak the week ending April 4. There were 606 cases of influenza reported during this week. Pneumonia had fallen to 81 cases and there was a decrease in the other reportable diseases. Those in double figures were 67 cases of measles, 37 of malaria, 34 of tuberculois, 31 of whooping cough, 24 of chickenpox, 18 of cancer, 14 of syphilis, 12 of septicemia and 10 of scarlet fever. There was 1 case of anthrax reported from St. Bernard Parish and 3 cases of meningitis reported this week. For the week ending April 11 the number of reported cases of influenza dropped to 291. The incidence of pneumonia also had fallen as only 66 cases were put down for this week. Other reportable diseases were 84 cases of syphilis, 62 of measles, 46 of whooping cough, 32 of malaria, 15 of scarlet fever and 12 of pulmonary tuberculosis. Two cases of cerebrospinal meningitis were reported from Orleans Parish. There seems to be an increase in the number of cases of meningitis. At the present time in the wards at Charity Hospital, for contagious diseases, there are 11 cases, a very unusual number.

HEALTH OF NEW ORLEANS

The Department of Commerce, Bureau of Census reports that for the week ending March 14 there were 197 deaths in New Orleans giving a death rate of 21.4. Of these deaths, 119 occurred in the white population and 78 in the colored, with a death rate for the first group of 18.2 and for the last 29.2. The infant mortality rate this week was 93. For the week ending March 21 the deaths totaled 198, divided 120 white and 78 colored. The rate for the three groups respectively was 21.5, 18.3 and 29.2. Infant mortality rate was 110 for this week. For the week ending March 28 there was listed the large number of 223 deaths, giving a death rate of 24.2. Amongst the white population there were 117 deaths with a rate of 17.9 and in the negro race there were 106 deaths with a death rate of 39.7. The infant mortality rate was 128. For the succeeding week, ending April 4, the death rate was still large, 247 deaths having taken place, of which 148 were in the white and 99 in the colored population of New Orleans. The total death rate was 26.8; for the white 22.6 and for the colored 37.1. The infant mortality rate this week was 134. So far this year the death rate for New Orleans is 20.8 contrasted with a rate of 17.5 last year.

WOMAN'S AUXILIARY

Louisiana State Medical Society

President—Mrs. Hermann B. Gessner, New Orleans.
President-Elect—Mrs. James Byron Vaughn, Monroe.
1st. Vice-President—Mrs. Samuel B. Kreeger, Lake Charles.
2nd. Vice-President—Mrs. L. E. Shirley, Jennings.
3rd. Vice-President—Mrs. D. T. Milam, Monroe.
4th. Vice-President—Mrs. Harry R. Marlatt, Homer.
Treasurer—Mrs. Jos. E. Heard, Shreveport.
Recording Secretary—Mrs. James W. Warren, New Orleans.
Corresponding Secretary—Mrs. H. Vernon Sims, New Orleans.
Parliamentarian—Mrs. C. E. Rew, Shreveport.

Ouachita Parish

The Woman's Auxiliary to the Ouachita Parish Medical Society held its regular monthly business meeting at the Business and Professional Woman's Club with Mesdames O'Donnell, Jancey and Johnson, acting as hostesses. A most interesting program was rendered. The President, Mrs. J. Q. Graves and her staff extended their greetings and best wishes to the new officers for 1936, who were accepted. The following officers were elected:

President—Mrs. J. P. Brown.
1st. Vice-President—Mrs. A. L. Peters.
2nd. Vice-President—Mrs. A. D. Tisdale.
Treasurer—Mrs. I. J. Wolff.
Recording Secretary—Mrs. D. T. Milam.
Corresponding Secretary—Mrs. Henson Coon.
Publicity Secretary—Mrs. W. L. Bendel.
Historian—Mrs. P. L. Perot.
Parliamentarian—Mrs. E. R. Yancey.

Complete plans were made for our honoring and celebrating Doctor's Day which we celebrated on March 29th. We had our daily papers print an editorial taken from the February issue of "Hygeia" which paid homage to the men of their profession. A most delightful and enjoyable informal tea was given at the Lotus Club from the hours of four to seven o'clock for the doctors. Early Sunday afternoon, they received most attractive butonnieres as a reminder of the party that was given in their honor. Thirty doctors and their wives enjoyed the most outstanding festivity of the year.

Mrs. D. T. Milam,
Publicity Chairman.

Orleans Parish

At the April meeting of the Woman's Auxiliary to the Orleans Parish Medical Society the auxiliary entertained at its annual "Mother's Party" having as guests of honor, the mothers of the members and mothers of the doctors of the Orleans Parish Medical Society. Each guest of honor received a sweet-pea corsage.

Dr. Ellsworth Woodward of Newcomb College gave a very interesting talk on art and Miss Frances Gayle Pickering played several very beautiful piano selections.

We were very proud to present to the Orleans Parish Medical Society Library, a check for one hundred dollars ($100.00) for the re-conditioning and re-binding of medical magazines.

The Doctor's Day "Leap Year" Party which was celebrated on March 30th was a huge success, in spite of the fact that a number of our guests were called away by their patients. We hope that this party will be a forerunner of what next year's celebration will be.

The delegates and alternates to the State Convention in Lake Charles will be Mesdames: M. Earle Erown, Wiley R. Buffington, George D. Feldner, Hermann B. Gessner, Charles Holbrook, Chaille Jamison, Shirley Lyons, A. L. Levin, William Warren.

Mrs. Ralph J. Christman,
Publicity Chairman.

Caddo Parish

The Woman's Auxiliary to the Shreveport Medical Society has had a very active Committee on Philanthropy this year. Free tonsillectomies and private hospitalization for children was obtained. The attending specialists and sanitariums contributed their services free of charge. Each member of the auxiliary was contacted and requested to save small bottles, cold cream jars and all containers of such size which could be used in the distribution of medicinal supplies provided for the indigent sick by the Caddo Parish Charity Medical Unit. These articles were collected and delivered to the above mentioned organization.

Clothes and food have been provided regularly for a widow and two little daughters. They also received a Christmas box including toys. A short time ago, a position was obtained for this mother which now enables her to be self-supporting.

Mrs. Johnson R. Anderson,
Publicity Chairman.

CLAIBORNE PARISH

The Woman's Auxiliary to the Claiborne Parish Medical Society met on Friday, April 10 in the home of Mrs. E. B. Middleton, Homer.

The Auxiliary entertained the doctors of Claiborne Parish on March 30, this being the day set aside nationally to honor the doctors, both living and dead.

Mrs. H. R. Marlatt, President, presented the auxiliary with a beautiful hand-made crocheted rug, for the purpose of raffling to increase funds for the treasurer. Mrs. F. Palmer of Homer was appointed chairman and a report that the chances were disposed of and $25.00 was raised, was made.

Claiborne Parish Auxiliary now one year old plans many activities for the coming year.

Mrs. C. W. Phillips,
Publicity Chairman.

Dear Auxiliary Members:

By the time you will have received this issue of the Journal, my office as Publicity Chairman for the state will have expired. I want to take this opportunity to thank each auxiliary for the splendid co-operation and assistance they have rendered throughout the past year, and sincerely trust that the interesting articles portraying the activities of our sister auxiliaries have been beneficial to everyone.

Alma W. Feldner
(Mrs. George D. Feldner)

BOOK REVIEWS

Lobar Pneumonia and Serum Therapy: By Frederick T. Lord, M. D. and Roderick Heffron, M. D. New York, The Commonwealth Fund, 1936. pp. 91. Price $1.00.

This little book of some 90 pages on lobar pneumonia and serum therapy is full of interesting and valuable information. It is based upon the Massachusetts Pneumonia Study begun in 1931. The first half of the book takes up etiology, factors influencing recovery, types of pneumococci and their identification, and clinical diagnosis. The authors stress the Neufeld method for rapid identification of types. The Massachusetts statistics are in accord with other eastern statistics in demonstrating that, of the 32 types thus far isolated, types I and II are together responsible for about 60 per cent of the cases of lobar pneumonia. The last half of the book considers in a clear and lucid manner precautions to be taken prior to serum administration, proper technic of serum administrations and generally accepted dosages of types I and II serum. Serum reactions and their treatment are also adequately considered. Finally, the results of serum treatment in type I when begun within 96 hours show a death rate of 11.1 per cent in serum treated cases against 25 per cent in cases not treated with serum. In type II the death rate is higher in both groups but still strikingly less in those treated with serum.

The book is a strong plea for the more frequent and earlier use of serum in properly selected cases. This book can be highly recommended to all practitioners who come in contact with many cases of lobar pneumonia. The chapters of contra-indications, proper administration and dosage of serum will many times repay the buyer for the small cost of the book.

RANDOLPH LYONS, M. D.

Diseases of Women: By Harry Sturgeon Crossen, M. D., F. A. C. S. and Robert James Crossen, M. D. 8th ed. St. Louis, C. V. Mosby Co., 1935. pp. 999. Price $10.00.

This standard textbook has been entirely revised in the eighth edition. The chapter on anatomy and physiology is presented in an excellent manner; and in the opinion of the reviewer the best that has been published in modern gynecological text, being thorough, concise, and "up to the minute". Chapter two, on gynecological pathology, is a veritable library of excellent photomicrographs with explanatory notes surpassing anything that the reviewer has seen in any volume on gynecology. The remainder of the book devoted to diagnosis and some treatment is up to the high standards found in the previous edition. En passant, it must be said that the classification of ovarian tumors appearing in this work is excellent from an embryological, physiological, and pathological standpoint.

CONRAD G. COLLINS, M. D.

Regional Anatomy: Adapted to dissections. By J. C. Hayner, B. S., M. D. Baltimore, William Wood and Co. 1935. pp. 687. Price $6.00.

This is not a book intended to supplant any standard text of anatomy dissecting manuels, or books on surgical anatomy but rather is intended to be used for review. The subject matter is not discussed in systems, as muscular or vascular as in most anatomy books but in parts as the perineal region and epigastric region where nerves, muscles, vessels, and are discussed in the same chapter. This book contains no illustrations and anatomy is discussed only in the gross and never in great detail. This book can be of value when one is looking for a condensed connected anatomy for quick review.

LOUIS BRISTOW, M. D.

The Pathology of Internal Diseases: By William Boyd, M. D., M. R. C. P., Ed. F. R. C. P. (Lond.) Dipl. Psych., F. R. S., Can., 2nd Ed. rev. Philadelphia, Lea & Febiger, 1935. pp. 904. Price $10.00.

In this second edition there has been a great deal of revision, and a very fine reference book has been made into one almost indispensable to the practitioner of medicine. As one reads this book it is almost unbelievable to realize that this is the cut and dried pathology of yesteryear. Embroadened in its scope, it now becomes a sentient thing. The author has developed his subject along physiological lines and the invaluable part of the discussion of each disease is the relationship of symptoms to pathology which he has so masterfully presented. It would be folly for the reviewer to evaluate critically the pathological material in the book. From those in the know he is willing to accept the work as that of a profound scholar. The historical allusions and personal experiences are excellently chosen.

I. L. ROBBINS, M. D.

Infant Nutrition: By Williams McKim Marriott, B. S., M. D. 2nd Ed. St. Louis, The C. V. Mosby Company, 1935. pp. 431. 27 illus. Price $4.50.

This is the second edition of a work which served to clarify and crystalize our knowledge of

infant nutrition when it appeared several years ago. Few men in modern pediatrics have dedicated more of their time to the study of nutrition and nutritional disturbances than Marriott. Being an unusual combination of biochemist and clinician, he has been able to direct and interpret the results of investigations both in the laboratory and at the bedside. Moreover, has has been fortunate in having men on his staff who have conducted studies which have proved to be of inestimable value to throw light on the subjects included in this book.

While this edition follows the general lines of the first, the size of the book has been decreased so that it is more convenient to handle. Most of it has been completely rewritten or revised. Special attention has been given to the subject of acidosis, alkalosis, and anhydremia, and they have been more intimately incorporated in the chapters on Diarrhea and Vomiting, instead of discussing them separately. In addition to a chapter on Allergy, a chapter on Miscellaneous Pediatric Technic has been added.

This book is recommended to students and physicians alike, with full assurance that it contains the modern conception of infant nutrition and nutritional disturbances of early life.

ROBERT A. STRONG, M. D.

Handbook of Anesthetics: By J. Stuart Ross, M. B., Ch. B., R. F. C. S. F. & H. P. Fairlee, M. D. 4th ed. Baltimore, William Wood & Co. 1935. pp. 300. Price, $4.00.

This book is just what the title indicates,—a handbook of anesthetics. While the general outline of it is good, a great deal of it is out of date. The chapter on ethylene is good and yet the author gives the preference to nitrous oxide in most cases.

Shock, operative and post-operative, is one of the chief concerns of the anesthetist. The chapter on shock is concise and interesting.

The chapter on blood gases is complete, especially that part on anoxemia.

While the authors caution against the dangers of chloroform they find a great many more indications for its use than we recognize. The reviewer can see no necessity for the use of chloroform except where the cautery is to be used about the face or the respiratory tract, and even then avertin and nitrous oxide can usually be substituted.

The entire chapter on choice of anesthetic could be re-written to advantage. Certainly the anesthetic of choice for old people should not be a chloroform and ether mixture.

This is the fourth edition of the book. While it has been revised and more or less brought up to date, it gives every evidence of having the groundwork of the first edition. There are many things in the book that will always be true, but there have possibly been more advances in anesthesia in the last few years than in any other branch of medicine. The book could probably be rewritten to advantage.

LILY L. DISMUKES, M. D.

A Doctor's Odyssey: A Sentimental Record of Le Roy Crummer, Physician, Author, Bibliophile, Artist in Living, 1872-1934. By. A. Gaylord Breaman, Baltmore, John Hopkins Press, 1935. pp. 340.

This small volume of three hundred pages is divided into different parts. In the opening part the author gives a brief account of Dr. Crummer's family, his early life and education. The second part deals with his practice and his teaching. Here is to be found some sound advice.

The rest of the book gives interesting accounts of his book collecting through Europe, numerous letters from and to Dr. Crummer and editorials and writings about his books and work.

This is a book that can be read with pleasure and profit.

J. M. BAMBER, M. D.

PUBLICATIONS RECEIVED

Hale, Cushman & Flint, Boston: Bewildered Patient by Marian Staats Newcomer, M. D.

P. Blakiston's Son & Co., Inc., Philadelphia: Evans' Recent Advances In Physiology, Fifth edition, revised by W. H. Newton M. D., M. Sc. (Manch.)

The H. W. Wilson Company, New York: The Cumulative Book Index, 1935, Edited by Mary Burnham.

Lea & Febiger, Philadelphia: Basal Metabolism in Health and Disease by Eugene F. DuBois, M. D.

D. Appleton-Century Company, Inc., New York: Preventive Medicine and Hygiene by Milton J. Rosenau.

Charles C. Thomas, Springfield: American Martyrs to Science Through the Roentgen Ray by Percy Brown, M. D., F. A. C. P., F. A. C. R.

Farrar & Rinehart, New York: American Chamber of Horrors by Ruth de Forest Lamb.

The C. V. Mosby Co., St. Louis: Pediatric Nursing by John Zahorsky, A. B., M. D., F. A. C. P.

Lea & Febiger, Philadelphia: Roentgenographic Technique by Darmon Artelle Rhinehart, A. M., M. D., F. A. C. R.

William Wood & Company, Baltimore: A Treatise on Medical Jurisprudence by Benton S. Oppenheimer, LL. B., LL. M. of the Cincinnati Bar. Demonstrations of Physical Signs in Clinical Surgery by Hamilton Bailey, F. R. C. S. (Eng.)

D. Appleton-Century Co., New York: The Balanced Diet by Logan Clendening, M. D.